

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر مارس



Summary

of Chapter 2

Lesson 1 Artificial Intelligence Applications

- » **Narrow AI:** It focuses on specific tasks, such as face recognition or language translation.
- » **General AI (GAI):** It can perform any human tasks, think, innovate, and adapt.
- » **Super AI (SAI):** It is the most advanced; it can solve complex problems and discover new things.

Key Points:

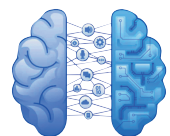
» Applications of AI in Daily Life:

- 1 **Personal Assistant:** Like Siri or Alexa, They use AI to understand and perform commands.
- 2 **Smart Games:** Video games use AI to make games fun and challenging.
- 3 **Smart Cars:** Self-driving cars are enabled by AI.
- 4 **Digital Doctors:** AI aids in faster and more accurate medical diagnoses.
- 5 **Instant Translator:** AI translates languages in real-time.
- 6 **Smart Shopping:** AI suggests products based on previous purchases.



» Fields of Artificial Intelligence:

- 1 **Machine Learning:** AI learns from data and experiences.
- 2 **Natural Language Processing (NLP):** AI understands, interprets, and speaks human language.
- 3 **Computer Vision:** AI analyzes and understands visual information.





- ④ **Robotics:** AI-powered robots perform various tasks.
- ⑤ **Expert Systems:** AI solves complex problems and make decisions.
- ⑥ **Deep Learning:** AI learns complex tasks using neural networks.

» Creating Intelligent Models with Teachable Machine:

- **Teachable Machine:** It is a tool for creating models to recognize images, sounds, and movements.
- **Model Building Training:** Teaching AI by showing it examples is similar to teaching a child.

Lesson 2 Sensors

Definition:

- » **Sensors:** They are devices that sense changes in the environment and convert them into signals for machines to understand and make decisions.

Key Points:

» How Sensors Work:

- ① **Sensing:** They capture information (heat, light, and sound).
- ② **Signal Conversion:** They convert information into electrical signals.
- ③ **Transmission:** They send signals to display results or perform operations.

» Importance of Sensors for Robots:

- **Function:** Sensors act as the “senses” of robots, helping them see, hear, sense, and touch.

» Types of Robotic Sensors:

- ① **Distance Sensors:** They measure the distance to avoid collisions.
- ② **Light Sensors:** They adapt to changing light conditions.
- ③ **Sound Sensors:** They respond to voice commands.
- ④ **Motion Sensors:** They detect movement and direction changes.



5 **Special Sensors:** They measure temperature and humidity.

» Examples of Devices Using Sensors:

1 **Vacuum Cleaner Robot:** It avoids obstacles.

2 **Surgical Robot:** It uses precise sensors to perform surgeries.

3 **Self-Driving Cars:** They see the road and make decisions.

» Types of Distance Sensors:

1 **Ultrasonic Sensors:** They emit high-frequency sound waves to measure distance.

– **Examples:** Vacuum cleaner robots, parking systems, and fluid level measurement

2 **Laser Rangefinders:** They emit laser beams for high accuracy.

– **Examples:** 3D laser scanners, ground scanning systems, and industrial measurement

3 **Visible Light Sensors:** They use digital cameras to analyze images.

– **Examples:** Self-driving car cameras, industrial vision systems, and augmented reality systems

4 **Infrared Sensors:** They emit infrared rays, then receive the returning rays.

» They are widely used in consumer electronics.

– **Examples:** Remote controls, and non-contact thermometers

5 **Time of Flight Sensors:** They measure the light pulse travel time.

– **Examples:** 3D sensors, and motion tracking systems

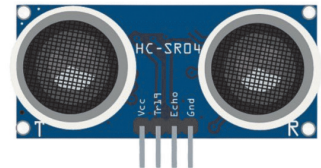
» Factors for Choosing Sensors:

1 **Required Range:** The maximum distance to measure

2 **Required Accuracy:** The measurement precision needed

3 **Operating Environment:** Conditions like lighting, temperature, and humidity.

4 **Cost:** Device and installation expenses.





»» Daily Applications of Sensors:

- 1 **Smartphones:** Taking pictures, adjusting lighting, determining locations
- 2 **Modern Cars:** Measuring speed, warning of collisions, assisting in parking
- 3 **Smart Homes:** Motion sensors for automatic lighting
- 4 **Phone Microphone:** Converting sound to electrical signals
- 5 **Motion Sensors in Games:** Detecting phone tilts
- 6 **Touch Screen:** Sensing finger touches

Lesson 3 Robots

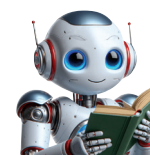
Definition:

- »» **Robot:** It is a device programmed to automatically perform specific tasks, capable of moving, sensing, and interacting with its surroundings.

Key Points:

»» Types of Robots:

- 1 **Industrial Robots:** They are used in factories for precise tasks, e.g., car production.
- 2 **Home Robots:** They are found in homes, e.g., Roomba for cleaning floors.
- 3 **Medical Robots:** They assist in surgeries with high accuracy.
- 4 **Educational Robots:** They are used in schools to teach programming, e.g., LEGO Mindstorms.



»» Robot Components:

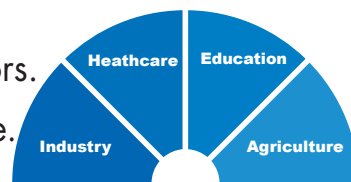
- 1 **Structure:** It is the main part carrying all components, made of materials like metal, plastic, or carbon.
- 2 **Sensors:** They are the senses of the robot, e.g., sound sensors and cameras.
- 3 **Motors:** They move parts of a robot, so it can move and execute commands, e.g., electric motors and pneumatic motors.



- ④ **Controller:** It is the “brain” of the robot, processes data and issues commands.
- ⑤ **Power Source:** It can be batteries, solar cells, or direct electrical power source.
- ⑥ **Software:** It makes the robot “smart,” includes algorithms for responses.
- ⑦ **Communication Tools:** They interact with users or other robots, e.g., Bluetooth and Wi-Fi.

» Areas of Use of Robots:

- ① **Industry:** They improve productivity, reducing errors.
- ② **Healthcare:** They assist in surgeries and patient care.
- ③ **Education:** They provide interactive learning.
- ④ **Agriculture:** They are used in precision farming to increase crops and reduce waste.



» Challenges:

- ① **Safety:** The need to ensure the safety of robots during work.
- ② **Employment:** Concerns that they can replace human labor.
- ③ **Ethics:** Impact on society.

» Benefits:

- ① **Increased Efficiency and Productivity:** They can do continuous work without fatigue or interruption.
- ② **High Accuracy and Reduced Errors:** They are precise in tasks, like surgeries and electronics assembly.
- ③ **Safety and Security:** They can perform dangerous tasks and handle heavy weights and hazardous materials.
- ④ **Adaptability and Diversity:** They perform various tasks efficiently. Ex: home robots and educational robots
- ⑤ **Reduced Costs:** They provide long-term cost savings by reducing human labor or errors, and achieving accuracy.
- ⑥ **Contributing to Development:** They encourage technological advancements, e.g., space exploration and medical research.



Lesson 4 Scratch

Definition:

» **Scratch Program:** It is a visual and easy-to-use educational tool for learning programming through games, animations, music, and more.



Key Points:

» Scratch Program Features:

- 1 **Simple Interface:** It uses and orders visual blocks to form programs.
- 2 **Educational:** It is designed to teach basic programming concepts in a fun way.
- 3 **Free:** It is available for download from its official website for free.
- 4 **Creative Thinking:** It develops skills in creative thinking and problem-solving.
- 5 **Problem-solving Skills:** It solves problems in a logical way.
- 6 **Collaboration:** It enhances teamwork skills.
- 7 **Foundation:** It provides a strong start for learning more complex programming languages.
- 8 **Sharing:** Its projects can be shared with others.

» Program Interface:

- **Menu Bar**
- **Command Blocks Area**
- **Script Area:** It collects programming sections.
- **Stage Area:** It shows project results.
- **Sprite Object**
- **Sprites Area:** It contains the project's objects.

» Coordinates:

- **Determine Coordinates:** X=..... (horizontal), Y=..... (vertical)
- **Change Coordinates:** Drag and drop the sprite to a new position.



»» Implement the project:

- To execute the project, click on the icon .
- To stop the execution of the project, click on the icon .

»» Saving the Project:

- File Menu: Choose "Save to your computer".
- The file extension is **Sb3**.

Lesson 5 Sprites Area in Scratch

Definition:

»» **Sprites Area:** It contains the sprites used in the project.

Key Points:

»» Sprites Area Features:

- 1 **Name:** It is modified by clicking and renaming.
- 2 **Location:** It determines the sprite's position (X, Y values).
- 3 **Direction:** It changes the sprite's movement direction.
- 4 **Visibility:** It shows or hides the sprite.
- 5 **Size:** It changes the sprite's size.
- 6 **Delete:** It removes the sprite.
- 7 **Add:** It is used to choose a new sprite.

»» Adding a New Sprite:

- Choose Sprite: Select Basketball.
- Remove: Delete the cat sprite.

»» Project 2: Moving the Ball

- **Objective:** To move the ball randomly, make a sound, repeat 10 times.

»» Steps:

- 1 **Motion:** Choose "Go to random position".
- 2 **Sound:** Choose "Play sound".
- 3 **Control:** Choose the "Repeat" command.
- 4 **Events:** Choose the "When Clicked" command.



»» Project 3: Spaceship

– **Objective:** To move a spaceship randomly, make a sound, change size, repeat 5 times, start from (0, 0).

– **Steps:**

- 1 **Insert Sprite:** Add Rocketship.
- 2 **Remove:** Delete the cat sprite.
- 3 **Background:** Choose "Space".

»» Square Drawing Project:

- 1 **Open Project:** Start a new project.
- 2 **Select Pen:** Drag the "pen" block to start drawing.
- 3 **Set Color and Size:** Use "Set Pen Color to" and "Set Pen Size to" blocks.
- 4 **Move the Pen:** Use "Go to x:y:" blocks to draw lines.
- 5 **Repeat the Steps:** Draw more lines to form shapes.

»» Drawing a circle:

»» Use the "Repeat" block to repeat the process of drawing short lines at different angles.

»» Notes:

- 1 **Drawing Shapes:** Set start and end points for lines.
- 2 **Adding Details:** Add features like eyes, mouth, and ears.



February and March Model Exams

Model Exam

1

1 Put (✓) or (X):

- 1 Artificial intelligence can learn new things slowly. ()
- 2 Self-driving cars rely entirely on artificial intelligence. ()
- 3 The first step to operate the sensor is signal conversion. ()
- 4 The design of the structure affects the robot's weight and mobility. ()
- 5 The student needs scratch program to writing a lot of complex code. ()
- 6 In the Scratch program Students face difficulty sharing projects with others. ()
- 7 Scratch uses a visual interface based on blocks. ()

2 Choose the correct answer:

- 1 Artificial intelligence can solve the problems that it is difficult for Humans to solve it easily and discovering new things we never imagined before:
 - a. General.
 - b. Narrow.
 - c. Super.
 - d. Precise.
- 2 Sensors help robots on
 - a. Teaching it new languages.
 - b. interacting with environment.
 - c. Increase its size.
 - d. Slowing down its operations.
- 3 is a type of sensor used to avoid obstacles.
 - a. Light sensors
 - b. Sound sensors
 - c. Distance sensors
 - d. Heat sensors

- 4 Robots assist in dangerous tasks such as
 a. handling hazardous chemicals b. handling heavy weights
 c. cleaning the house d. both a and b
- 5 Scratch helps students
 a. make remote controls
 b. learn the principles of programming
 c. 3D scanning d. all of them
- 6 The "Sprite" in Scratch represents a/an
 a. background b. object or character
 c. command block d. none of them
- 7 To execute the project, click on the icon
 a.  b. 
 c.  d. 
- 8 is the main part that carries all the components of the robot.
 a. Motor b. Structure
 c. Sensor d. Controller

Model Exam

2

1 Put (✓) or (X):

- 1 Artificial intelligence is a branch of computer science. ()
- 2 Light sensors are useful in underwater environments. ()
- 3 Light sensors helps cars determine the distance to other vehicles. ()
- 4 Robots are limited to working in factories only. ()
- 5 The Scratch program helps students learn the basics of programming. ()
- 6 To save project from the list File choose Save to your computer. ()
- 7 Smart home lighting system it uses sensors to turn on the lights when someone enters the room. ()

2 Choose the correct answer:

- 1 Like Siri or Alexa uses artificial intelligence to understand and execute your commands:
- a. A personal assistant.
 - b. Interpreter.
 - c. Smart Shopping.
 - d. Natural language.
- 2 From The common applications For sensors Using Infrared rays in
- a. Smartphones.
 - b. Remote controls.
 - c. Vacuum cleaners.
 - d. 3D scanning.
- 3 devices capture information from the surrounding environment and convert it into electrical signals.
- a. Sensors
 - b. Strings
 - c. Touch Screen
 - d. Robotic Arm
- 4 In production lines, robots can perform repetitive tasks accurately which leads to
- a. slow production
 - b. decreased efficiency
 - c. increased efficiency and productivity
 - d. lack of development
- 5 The sprites used in a Scratch project appear in the area.
- a. Sensors
 - b. Bluetooth
 - c. Strings
 - d. Sprites
- 6 In Scratch, to add a new object, press on
- a. Start
 - b. Choose Sprite
 - c. Rename Sprite
 - d. none of them
- 7 A power source for robots is the:
- a. sensor
 - b. motor
 - c. batteries
 - d. software
- 8 The smart vacuum cleaner is a type of robot used for floor cleaning.
- a. industrial
 - b. home
 - c. agricultural
 - d. medical

Model Exam

3

1 Put (✓) or (X):

- 1 Artificial intelligence is only one type. ()
- 2 Laser distance sensors are considered accurate because they Use Laser beams. ()
- 3 Motors used in robots are Electric motors and pneumatic motors. ()
- 4 Scratch is considered a difficult-to-use educational tool. ()
- 5 Scratch offers a very wide range of programming ideas. ()
- 6 Robots do not need to use software in their work. ()
- 7 To be able to move the object, we use the Motion Blocks from the Area Blocks. ()
- 8 Robots can improve productivity and reduce human errors in industry. ()

2 Choose the correct answer:

- 1 The X and Y values in Scratch represent the
 - a. size of the sprite
 - b. direction of the sprite
 - c. location of the sprite
 - d. color of the sprite
- 2 In scratch, result of the work or project appears in the area.
 - a. Programming Script Area.
 - b. Stage area
 - c. Blocks area.
 - d. Creatures Sprites.
- 3 is an example of General Artificial Intelligence (GAI).
 - a. A chess-playing robot
 - b. A robot that mimics humans
 - c. Siri
 - d. None of the previous
- 4 The first step in the operation of the sensor is
 - a. Transmitting
 - b. Sensing
 - c. Transduction

- 3 Narrow AI focuses on performing
- a. multiple tasks b. specific tasks
c. human-like tasks d. all tasks
- 4 are commonly used in remote controls.
- a. Ultrasonic sensors b. Infrared sensors
c. Light sensors d. Motion sensors
- 5 To save your project in scratch, select "Save to your computer" from the menu.
- a. file b. edit
c. delete d. share

3 • Choose the correct answer from the list below::

(Teachable Machine _ Infrared _ Home _ GAI _
Neural networks _ Sensors)

- 1 sensors are used to measure body temperature without the need for direct contact.
- 2 is a tool that helps create AI models to recognize images, sounds, and movements.
- 3 The smart vacuum cleaner (Roomba) is a type of robot.
- 4 AI that can perform any task a human can do is called
- 5 Deep learning depends mainly on

Model Exam

5

1 Put (✓) or (X):

- 1 Artificial intelligence is used only in the video game industry. ()
- 2 Control unit processes data collected by the sensors and Commands are issued to the engines. ()
- 3 In the Scratch program the code displays in the stage area. ()
- 4 In order to move the object we use the group Motion from Command Groups Area and select Blocks Area. ()
- 5 To display "Hello" on the platform, From the Looks category, select the command: say "Hello". ()

2 Choose the correct answer:

- 1 A new background for the project is inserted by pressing
 - a. Script Area
 - b. Stage
 - c. Choose Sprite
 - d. Choose a Backdrop
- 2 If the movement of sprite is done quickly, the command used is from Control Blocks:
 - a. Wait.
 - b. Repeat.
 - c. Forever.
 - d. Else.
- 3 is a branch of computer science.
 - a. Scratch
 - b. string
 - c. Artificial intelligence
 - d. motors
- 4 In which environment are light sensors useful ?
 - a. In dark rooms
 - b. In noisy factories
 - c. In places with variable lighting conditions
 - d. In underwater environments

5 is a field of AI that involves learning from mistakes.

- a. Machine Learning
- b. Natural Language Processing
- c. Computer Vision
- d. Robotics

3 Complete the Following Statements:

1 focuses on specific tasks, such as face recognition or language translation

2 The is the "brain" of the robot.

3 The file extension for Scratch projects is

4 sensors detect movement and changes in directions.

5artificial intelligence can solve problems that are difficult for humans to solve easily and discover new things we never imagined before.

Answers

MODEL (1)

- 1 1 X 2 ✓ 3 X 4 ✓
5 X 6 X 7 ✓

- 2 1 c 2 b 3 c 4 d
5 b 6 b 7 d 8 b

MODEL (2)

- 1 1 ✓ 2 X 3 X 4 X
5 ✓ 6 ✓ 7 ✓

- 2 1 a 2 b 3 a 4 c
5 d 6 b 7 c 8 b

MODEL (3)

- 1 1 X 2 ✓ 3 ✓ 4 X
5 ✓ 6 X 7 ✓ 8 ✓

- 2 1 c 2 b 3 b 4 b
5 b 6 c 7 b

MODEL (4)

- 1 1 ✓ 2 ✓ 3 X
4 X 5 ✓

- 2 1 b 2 b 3 b
4 b 5 a

- 3 1 Infrared
2 Teachable Machine
3 Home 4 GAI
5 Neural networks

MODEL (5)

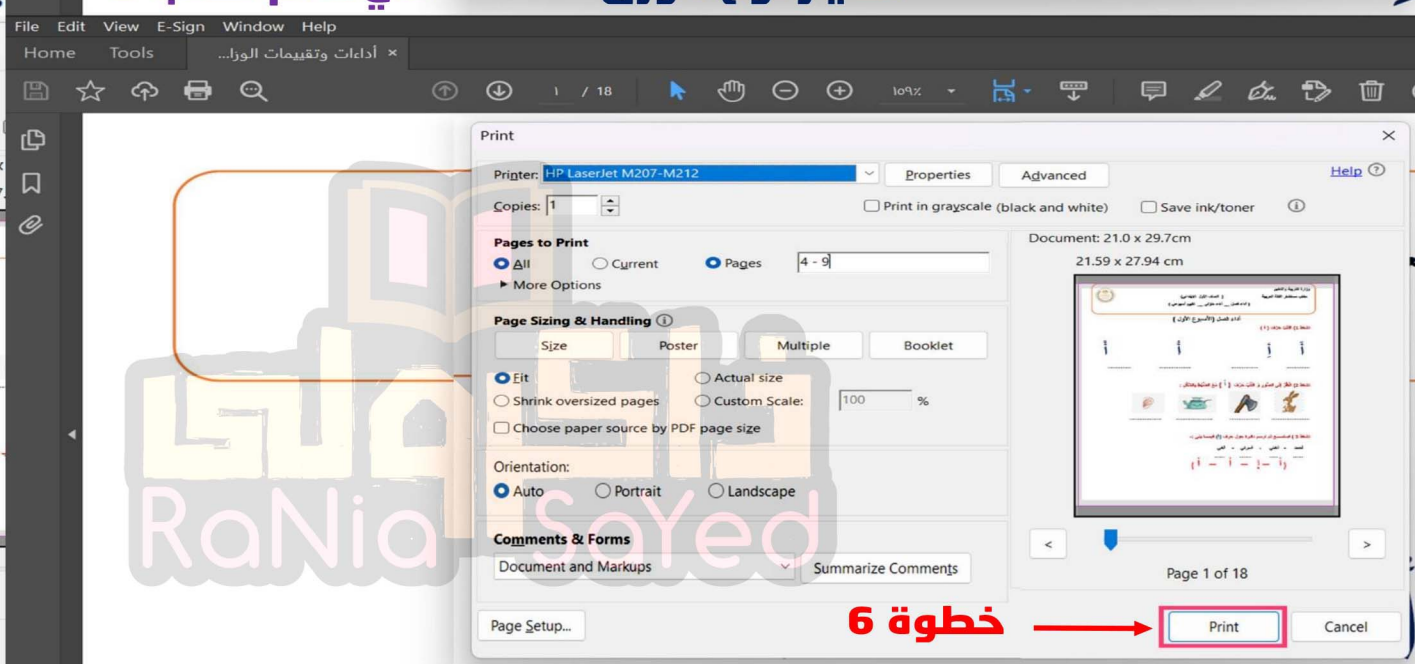
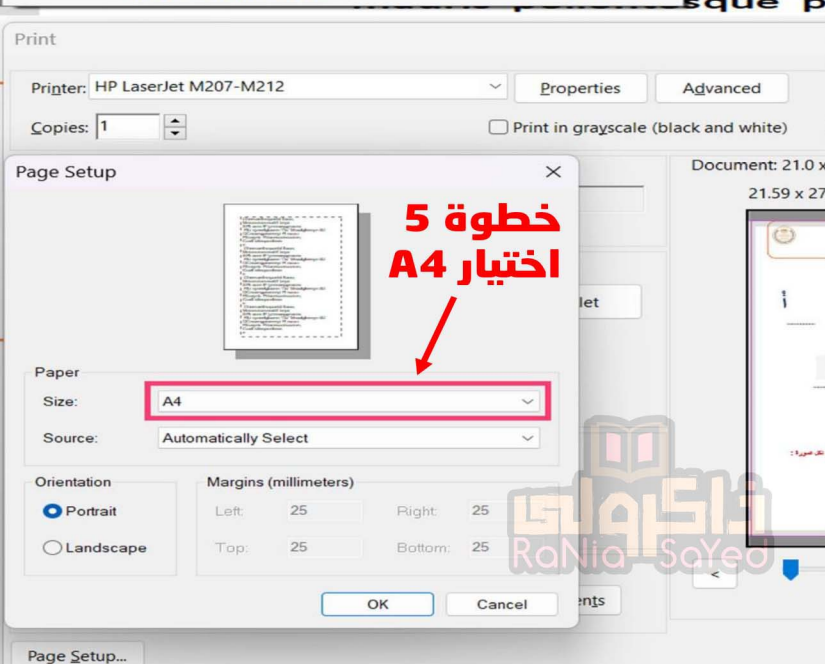
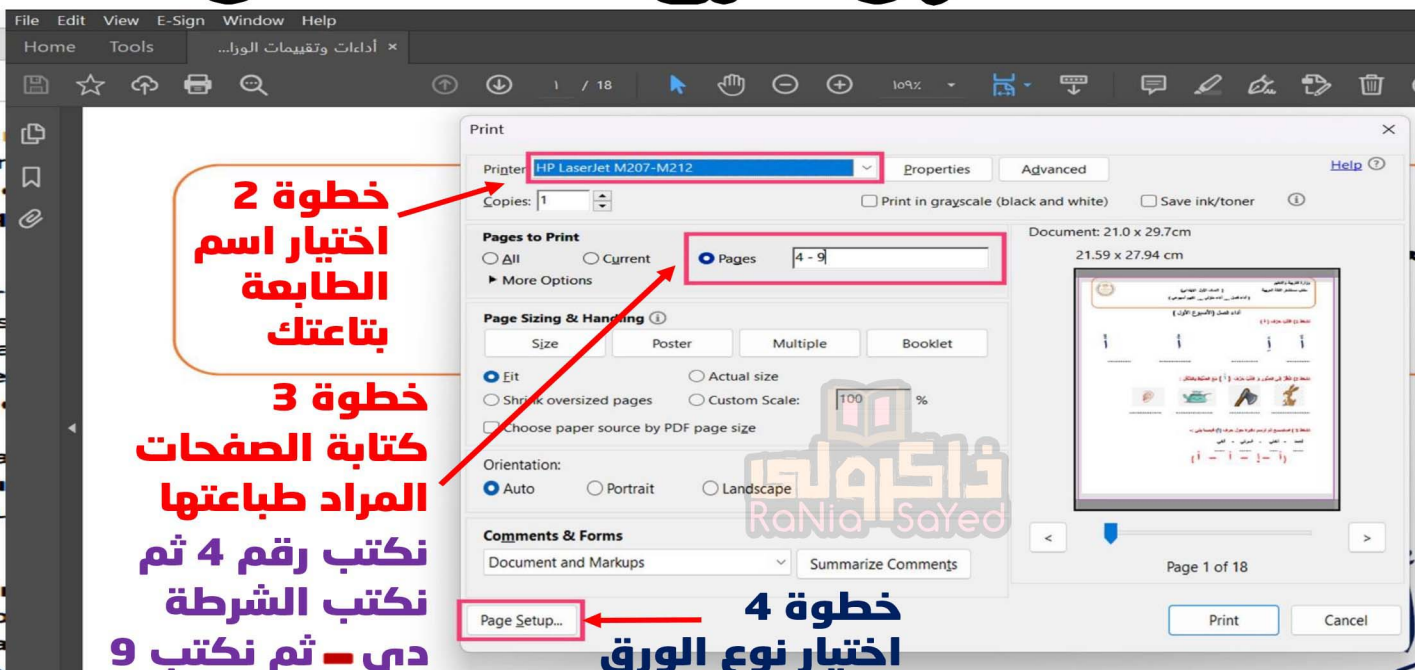
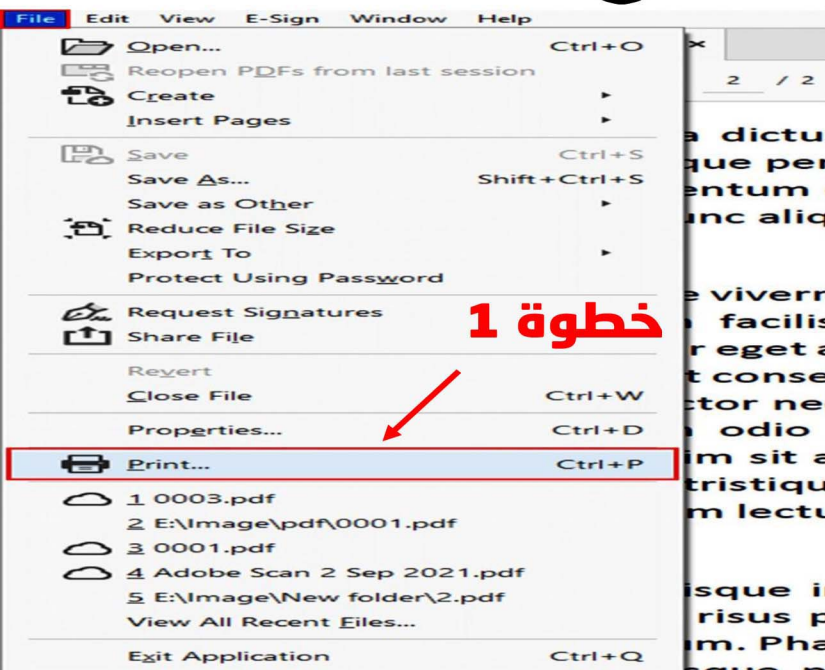
- 1 1 X 2 ✓ 3 X
4 ✓ 5 ✓

- 2 1 d 2 a 3 c
4 c 5 a

- 3 1 Narrow AI 2 controller
3 sb3 4 Motion
5 Super

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر مارس



Put (✓) or (X)

- 1 .Artificial intelligence can learn new things slowly () .**
- 2 .Self-driving cars rely on artificial intelligence () .**
- 3 .Artificial intelligence is a branch of computer science () .**
- 4 .Artificial intelligence is only one type () .**
- 5 .Artificial intelligence can help doctors diagnose diseases () .**
- 6 .Artificial intelligence is only used in the video game industry () .**
- 7 .The personal assistant relies on the phone device and does not use artificial intelligence.()**
- 8 .For artificial intelligence to become intelligent, it needs small amounts of information () .**
- 9 .Narrow artificial intelligence can perform any task a human can perform () .**
- 10 .General artificial intelligence is the most advanced () .**
- 11 .General artificial intelligence focuses on performing a specific task () .**
- 12 .Super artificial intelligence can solve complex problems () .**
- 13 .Smart games are used to make gaming more enjoyable. Fun () .**
- 14 .Instant Translator is used to facilitate communication between people () .**
- 15 .Smart Shopping offers you product suggestions you might like () .**
- 16 .Natural language processing is similar to a machine language translator () .**
- 17 .Robots perform many tasks with great precision () .**
- 18 .The first step in a sensor's operation is conversion () .**
- 19 .Laser rangefinders are accurate because they use laser beams () .**
- 20 .Light sensors are useful in underwater environments () .**
- 21 .A smart home lighting system uses sensors to turn on lights when someone enters the room () .**
- 22 .An ultrasonic sensor is used for non-contact temperature measurement () .**
- 23 .Visible light sensors help cars determine their distance to other vehicles () .**

- 23** .Sensors convert changes in the surrounding environment into electrical signals that devices can understand () .
- 24** .Sensors are only used in robots and are not used in smartphones or cars () .
- 25** .Distance sensors help robots avoid collisions with surrounding obstacles. ()
- 26** .Infrared sensors operate by emitting high-frequency sound waves () .
- 27** .Environmental conditions such as humidity and temperature can affect the selection of the appropriate sensor type () .
- 28** .The design of the structure affects the weight and ability to move of the robot .
- 29** .Robots are limited to factories only () .
- 30** .Motors used in robots include electric motors and pneumatic motors () .
- 31** .Medical robots assist doctors in performing surgeries () .
- 32** .The control unit processes the data collected by the sensors and issues commands to the motors () .
- 33** .Robots do not require software to operate () .
- 34** .Sensors do not play a role in robot movement and sensing the surrounding environment () .
- 35** .Robots rely solely on direct power sources and cannot use batteries or solar cells () .
- 36** .Robots use communication tools to interact with users or other robots () .
- 37** .Robots are used in industry, healthcare, and education () .
- 38** .Robots cannot be programmed to perform various tasks as needed () .
- 39** .Robots help reduce risks to human life in hazardous environments () .
- 40** .Robots are used in agriculture to cultivate plants manually () .
- 41** .The precision of robots in performing tasks helps improve manufacturing quality () .
- 42** .There are some challenges facing robotics technology, such as safety, employment, and ethics () .
- 43** .The control unit is the brain of the robot and varies from simple to complex() .
- 44** .Wi-Fi is one of the communication tools between robots and users () .

- 45 .In the Scratch program, a student needs to write a lot of complex code () .
- 46 .Scratch is considered a difficult educational tool to use () .
- 47 .In Scratch, the Stage area displays the programming sections () .
- 48 .Scratch is a paid program () .
- 49 .Scratch uses a visual interface based on a set of blocks () .
- 50 .Scratch helps students learn the basic of programming () .
- 51 .Scratch provides a very wide range of ideas that can be programmed () .
- 52 .In Scratch, students have difficulty sharing projects with others () .
- 53 .In Scratch, the results of the work or project appear in the Blocks Area () .
- 54 .To execute the project, click the  icon ()
- 55 . Interactive AI games can be created using Scratch () .
- 56 .The Scratch interface cannot be changed to Arabic () .
- 57 .The wait command can be used to control the speed of Sprite 's movement () .
- 58 .Sprites used in the project appear in the Sprites area () .
- 59 .Sprite 's location on the platform is determined by the value of the horizontal axis X only .()
- 60 .The horizontal and vertical axes are used to determine the current location of the Sprite on the platform () .
- 61 .To modify the name of the Sprite , click on its current name and rename it() .
- 62 .The direction of the Sprite 's movement can be changed by clicking on the word " Direction" .()
- 63 . The Sprite can be shown or hidden on the platform by clicking on Choose Sprite .()
- 64 .We use click , drag-and-drop to interact with any command inside the code section. ()
- 65 .A script is a set of commands arranged in a specific order () .
- 66 . The size of the sprite is changed by its value in the Sprites area () .
- 67 .The Sprite can be removed from the platform () .

- 68** .Only one Sprite can be added to the platform () .
- 69** .To add a new Sprite, click Choose Sprite () .
- 70** .The Stop command is used to watch the project execution () .
- 71** .A new background is added to the project through the script area() .
- 72** .The Start command is used to stop project () .
- 73** .We use the (X,Y) coordinates to determine the location of the Sprite on the stage () .
- 74** .In Scratch, an object's name can be modified more than once () .
- 75** .In Scratch, the horizontal and vertical axis are used to determine the current location of the Sprite on the platform () .

Choose the correct answer from the following options:

1Artificial intelligence can easily solve problems that are difficult for humans and discover new things we never imagined before.

- A.** Narrow **B.** General **C.** Super **D.** Precise

2 Like Siri or Alexa, artificial intelligence is used to understand and carry out your commands.

- A.** Personal assistant **B.** Instant translator
C. Smart shopping **D.** Natural language.

3 .Sensors help robots to.....

- A.** Teach them new languages. **B.** Allow them to interact with their environment.
C. Increase their size. **D.** Slow down their operations.

4 .A common application of sensors is the use of infrared radiation in.....

- A.** Smartphones **B.** Remote controls **C.** Vacuum cleaners **D.** 3D scanning.

5 .Robots help in dangerous tasks such as.....

- A.** Transportation **B.** Handling heavy loads and hazardous chemicals
C. Irrigating gardens and parks **D.** House cleaning.

6 .In production lines, robots can perform repetitive tasks accurately and without delay, which leads to.....

- A. Increased efficiency and productivity B. Decreased efficiency and productivity**
C. Lack of product development D. Slower production processes.

7 .To execute the project, click on the icon.



8 .In Scratch, the result of the project appears on the area

- A- Script Area B- Stage C- Area Blocks D- Sprites**

9 .In Scratch, to repeat the movement of a sprite, we use thecommand

- A- Start B- Choose Sprite C- Repeat D- Stop**

10 .In Scratch, to add sound effects to a sprite, we use the command

- A- Repeat B- Play Sound C- Looks D- Choose a Backdrop**

11. depends mainly on neural networks.

- a. Machine learning b. Computer vision C. Deep Learning d. Sensors**

The final step in a sensor's operation is.....

- A. Transmission B. Display C. Sensing D. Transduce**

13 .The primary function of a sensor is to.....

- A. Store data B. Capture environmental changes and convert them into signals**
C. Display images D. Produce sound.

14 .Sensors help robots to.....

- A. Teach them new languages B. Allow them to interact with their environment**
C. Increase their size D. Slow down their operation

15.....is used in robots to react to sounds.

- A. Light sensors B. Sound sensors**
C. Distance sensors D. Temperature sensors.

16 .The first step in a sensor's operation is.....

- A. Transmit B. Display C. Sensing D. Transduce**

17.....is commonly used in remote controls.

- A.** Ultrasonic sensors
- B.** Infrared sensors
- C.** Light sensors
- D.** Motion sensors

18 .Laser rangefinders are accurate because they use..... ..

- A.** Sound waves
- B.** High-frequency waves
- C.** Laser beams
- D.** Visible light

19 .In which environment are light sensors useful ?.....

- A.** In dark rooms
- B.** In places with variable lighting conditions
- C.** In underwater environments
- D.** In noisy factories.

20 .Which of the following sensors is used to measure distance using high-frequency sound waves ?.....

- A.** Ultrasonic sensors
- B.** Laser range finders
- C.** Motion sensors
- D.** Infrared sensors

21 sensors are used to turn on lights when someone enters the room.

- A.** Smartphone
- B.** Smart car
- C.** Smart home lighting system
- D.** Smart watch

22is used for non-contact temperature measurement

- A.** Ultrasonic sensor
- B.** Infrared sensor
- C.** Light sensor
- D.** Motion sensors

23-The main purpose of the signal conversion step in sensors is to.....

- A.** Send signals to another device
- B.** Convert information into electrical signals
- C.** Turn off the sensor
- D.** Display the results

24helps cars determine the distance to other vehicles.

- A.** Sound sensors
- B.** Visible light sensors
- C.** Light sensors
- D.** Infrared sensor

25 .The practical use of motion sensors in games is considered to be.....

- A.** Changing the volume
- B.** Adjusting the screen brightness
- C.** Tracking player movements
- D.** Improving sound quality

26 .Factors that determine the choice of a sensor for a particular application include.....

- A. Device brand** **B. Device color**
- C. Environment and required accuracy** **D. Device size**

27 .Among the challenges facing robotics technology are.....

- A. Increasing reliance on paper documents.** **B. Increasing reliance on smartphones.**
- C. Safety, employment, and ethics.** **D. Increasing reliance on traditional machines.**

28 .Laser scanner sensors are used to create 3D.....

- A. Models** **B. Algorithms** **C. Locations** **D. Places**

29systems are used to measure dimensions with high accuracy in various industries.

- A. Augmented Reality** **B. Ground Surveying**
- C. Industrial Measurement** **D. Time of Flight**

30 .Smartphones use sensors to help them.....

- A. Capture images** **B. Adjust lighting**
- C. Determine the phone's location** **D. All of the above**

31 .Power sources used in robots include.....

- A. Solar cells only** **B. Batteries, solar cells, and direct power sources**
- C. Direct power sources only** **D. Pneumatic actuators only**

32 .The Scratch program file has the extension.....

- A. Svb** **B. Sb3** **C. Doc** **D. Xls**

33 .Sprite movement commands are found in the command.

- A. Motion** **B. Events** **C. Looks** **D. Control**

34 .To save a project in Scratch, select Save to your computer from the menu

- A. Home** **B. View** **C. Tool** **D. File**

Complete the following sentences with the appropriate brackets:

(super - motors - Sprites - signal conversion)

2 -It enables you to show and hide an Sprite using the area in Scratch.

3 -.....is considered the muscles of robots.

4 -Sensors operate through specific steps: sensing,, and transmitting.

5 -Some types of artificial intelligence are narrow, general, and.....

**(Machine Learning - Teachable Machine – Structure - Expert Systems –
Remote Controls - Motion Tracking Systems)**

1 -..... is the basic part that holds all the components of the robot.

2 -..... is the ability of artificial intelligence to learn new things.

3 is a website used to create intelligent models.

4 is an example of infrared sensors.

5.can solve complex problems and make difficult decisions.

6 is based on time-of-flight sensors.

(Light sensors - Scratch - Controller - Repeat – Narrow)

1 -Artificial Intelligence focuses on performing a specific task.

2 -..... are used in robots operating in areas with changing light.

3- is a free program for teaching the basics of programming.

4 -Sprite movement can be repeated using the command.....

5- is the brain of robot .

(Motion - Programming sections - Deep Learning - Communication Tools- Motion sensors)

- 1 -..... help robots navigate and interact with their surrounding environment.
- 2 -..... is a set of commands arranged in a specific manner.
- 3- contains a set of building blocks for moving sprites in Scratch.
- 4- is one of the artificial intelligence tools that rely on neural networks to learn things very quickly.
- 5- Robots use to interact with users or other robots.

Correct the underlined part in the following sentence:

- 1 -The wait command is used to repeat a set of commands several times in Scratch.
- 4 -Excel is a fun educational tool for learning the basics of programming.
- 5 -Sound sensors are used in robots that operate in areas with variable light.
- 6 -A model can be created on the EKB website to teach a computer to recognize groups of images.
- 7 -Roomba is an example of an educational robot.
- 8 -LEGO Mindstorms is an example of a home robot.
- 9 -Motors are used as a control unit (the brain of the robot) to direct and control the robot.
- 10 -Light sensors help robots navigate and interact with their surroundings.
- 11 -From the Edit menu, you can save your project in Scratch.
- 12 -The Y coordinate represents the horizontal axis in Scratch.
- 13 -The Blocks area displays the project results in Scratch.
- 14 -The file extension for a Scratch program project is .exe .

Put (✓) or (X)

- 1 .Artificial intelligence can learn new things slowly (X) .
- 2 .Self-driving cars rely on artificial intelligence (✓) .
- 3 .Artificial intelligence is a branch of computer science (✓) .
- 4 .Artificial intelligence is only one type (X) .
- 5 .Artificial intelligence can help doctors diagnose diseases (✓) .
- 6 .Artificial intelligence is only used in the video game industry (X) .
- 7 .The personal assistant relies on the phone device and does not use artificial intelligence. X
- 8 .For artificial intelligence to become intelligent, it needs small amounts of information (X) .
- 9 .Narrow artificial intelligence can perform any task a human can perform (X) .
- 10 .General artificial intelligence is the most advanced (X) .
- 11 .General artificial intelligence focuses on performing a specific task (X) .
- 12 .Super artificial intelligence can solve complex problems (✓) .
- 13 .Smart games are used to make gaming more enjoyable. (✓) .
- 14 .Instant Translator is used to facilitate communication between people (✓) .
- 15 .Smart Shopping offers you product suggestions you might like (✓) .
- 16 .Natural language processing is similar to a machine language translator (✓) .
- 17 .Robots perform many tasks with great precision (✓) .
- 18 .The first step in a sensor's operation is conversion (X) .
- 19 .Laser rangefinders are accurate because they use laser beams (✓) .
- 20 .Light sensors are useful in underwater environments (X) .
- 21 .A smart home lighting system uses sensors to turn on lights when someone enters the room (✓) .
- 22 .An ultrasonic sensor is used for non-contact temperature measurement (X) .

- 23** .Visible light sensors help cars determine their distance to other vehicles (✓) .
- 23** .Sensors convert changes in the surrounding environment into electrical signals that devices can understand (✓) .
- 24** .Sensors are only used in robots and are not used in smartphones or cars (X) .
- 25** .Distance sensors help robots avoid collisions with surrounding obstacles. (✓)
- 26** .Infrared sensors operate by emitting high-frequency sound waves (X) .
- 27** .Environmental conditions such as humidity and temperature can affect the selection of the appropriate sensor type (✓) .
- 28** .The design of the structure affects the weight and ability to move of the robot .
(✓)
- 29** .Robots are limited to factories only (X) .
- 30** .Motors used in robots include electric motors and pneumatic motors (✓) .
- 31** .Medical robots assist doctors in performing surgeries () .
- 32** .The control unit processes the data collected by the sensors and issues commands to the motors (✓) .
- 33** .Robots do not require software to operate (X) .
- 34** .Sensors do not play a role in robot movement and sensing the surrounding environment (X) .
- 35** .Robots rely solely on direct power sources and cannot use batteries or solar cells (X) .
- 36** .Robots use communication tools to interact with users or other robots (✓) .
- 37** .Robots are used in industry, healthcare, and education (✓) .
- 38** .Robots cannot be programmed to perform various tasks as needed (X) .
- 39** .Robots help reduce risks to human life in hazardous environments (✓) .
- 40** .Robots are used in agriculture to cultivate plants manually (X) .
- 41** .The precision of robots in performing tasks helps improve manufacturing quality (✓) .

- 42 .There are some challenges facing robotics technology, such as safety, employment, and ethics (✓) .
- 43 .The control unit is the brain of the robot and varies from simple to complex ✓ .
- 44 .Wi-Fi is one of the communication tools between robots and users (✓) .
- 45 .In the Scratch program, a student needs to write a lot of complex code (X) .
- 46 .Scratch is considered a difficult educational tool to use (X) .
- 47 .In Scratch, the Stage area displays the programming sections (X) .
- 48 .Scratch is a paid program (X) .
- 49 .Scratch uses a visual interface based on a set of blocks (✓) .
- 50 .Scratch helps students learn the basic of programming (✓) .
- 51 .Scratch provides a very wide range of ideas that can be programmed (✓) .
- 52 .In Scratch, students have difficulty sharing projects with others (X) .
- 53 .In Scratch, the results of the work or project appear in the Blocks Area (X) .
- 54 .To execute the project, click the  icon (✓)
- 55 .Interactive AI games can be created using Scratch (✓) .
- 56 .The Scratch interface cannot be changed to Arabic (X) .
- 57 .The wait command can be used to control the speed of Sprite 's movement ✓ .
- 58 .Sprites used in the project appear in the Sprites area (✓) .
- 59 .Sprite 's location on the platform is determined by the value of the horizontal axis X only .(X)
- 60 .The horizontal and vertical axes are used to determine the current location of the Sprite on the platform (✓) .
- 61 .To modify the name of the Sprite , click on its current name and rename it .✓
- 62 .The direction of the Sprite 's movement can be changed by clicking on the word " Direction" .(✓)
- 63 . The Sprite can be shown or hidden on the platform by clicking on Choose Sprite .(X)

- 64 .We use click , drag-and-drop to interact with any command inside the code section. (✓)
- 65 .A script is a set of commands arranged in a specific order (✓) .
- 66 . The size of the sprite is changed by its value in the Sprites area (✓) .
- 67 .The Sprite can be removed from the platform (✓) .
- 68 .Only one Sprite can be added to the platform (X) .
- 69 .To add a new Sprite, click Choose Sprite (✓) .
- 70 .The Stop command is used to watch the project execution (X) .
- 71 .A new background is added to the project through the script area(X) .
- 72 .The Start command is used to stop project (X) .
- 73 .We use the (X,Y) coordinates to determine the location of the Sprite on the stage (✓) .
- 74 .In Scratch, an object's name can be modified more than once (✓) .
- 75 .In Scratch, the horizontal and vertical axis are used to determine the current location of the Sprite on the platform (✓) .

Choose the correct answer from the following options:

1Artificial intelligence can easily solve problems that are difficult for humans and discover new things we never imagined before.

- A. Narrow B. General C. Super D. Precise

2 Like Siri or Alexa, artificial intelligence is used to understand and carry out your commands.

- A. Personal assistant B. Instant translator
C. Smart shopping D. Natural language.

3 .Sensors help robots to.....

- A. Teach them new languages. B. Allow them to interact with their environment.
C. Increase their size. D. Slow down their operations.

4 .A common application of sensors is the use of infrared radiation in.....

- A. Smartphones B. Remote controls C. Vacuum cleaners D. 3D scanning.

5 .Robots help in dangerous tasks such as.....

- A. Transportation B. Handling heavy loads and hazardous chemicals
C. Irrigating gardens and parks D. House cleaning.

6 .In production lines, robots can perform repetitive tasks accurately and without delay, which leads to.....

- A. Increased efficiency and productivity B. Decreased efficiency and productivity
C. Lack of product development D. Slower production processes.

7 .To execute the project, click on the icon.



8 .In Scratch, the result of the project appears on the area

- A- Script Area B- Stage C- Area Blocks D- Sprites

9 .In Scratch, to repeat the movement of a sprite, we use thecommand

- A- Start B- Choose Sprite C- Repeat D- Stop

10 .In Scratch, to add sound effects to a sprite, we use the command

- A- Repeat B- Play Sound C- Looks D- Choose a Backdrop

11. depends mainly on neural networks.

- a. Machine learning b. Computer vision C. Deep Learning d. Sensors

12. The final step in a sensor's operation is.....

- A. Transmission B. Display C. Sensing D. Transduce

13 .The primary function of a sensor is to.....

- A. Store data B. Capture environmental changes and convert them into signals
C. Display images D. Produce sound.

14 .Sensors help robots to.....

- A. Teach them new languages B. Allow them to interact with their environment
C. Increase their size D. Slow down their operation

15.....is used in robots to react to sounds.

A. Light sensors

B. Sound sensors

C. Distance sensors

D. Temperature sensors.

16 .The first step in a sensor's operation is.....

A. Transmit

B. Display

C. Sensing

D. Transduce

17.....is commonly used in remote controls.

A. Ultrasonic sensors

B. Infrared sensors

C. Light sensors

D. Motion sensors

18 .Laser rangefinders are accurate because they use.....

A. Sound waves

B. High-frequency waves

C. Laser beams

D. Visible light

19 .In which environment are light sensors useful ?.....

A. In dark rooms

B. In places with variable lighting conditions

C. In underwater environments

D. In noisy factories.

20 .Which of the following sensors is used to measure distance using high-frequency sound waves ?.....

A. Ultrasonic sensors

B. Laser range finders

C. Motion sensors

D. Infrared sensors

21 sensors are used to turn on lights when someone enters the room.

A. Smartphone

B. Smart car

C. Smart home lighting system

D. Smart watch

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- A. Motion** **B. Events** **C. Looks** **D. Control**

34 .To save a project in Scratch, select Save to your computer from the menu

- A. Home** **B. View** **C. Tool** **D. File**

Complete the following sentences with the appropriate brackets:

(super - motors - Sprites - signal conversion)

2 -It enables you to show and hide an Sprite using the **Sprites** area in Scratch.

3- **motors** is considered the muscles of robots.

4 -Sensors operate through specific steps: sensing, **signal conversion** and transmitting.

5 -Some types of artificial intelligence are narrow, general, and **super**

**(Machine Learning - Teachable Machine – Structure - Expert Systems –
Remote Controls - Motion Tracking Systems)**

1 **Structure** is the basic part that holds all the components of the robot.

2 **Machine Learning** is the ability of artificial intelligence to learn new things.

3 **Teachable Machine** is a website used to create intelligent models.

4 **Remote Controls** is an example of infrared sensors.

5. **Expert Systems** can solve complex problems and make difficult decisions.

6 **Motion Tracking Systems** is based on time-of-flight sensors.

(Light sensors - Scratch - Controller - Repeat – Narrow)

- 1 -Artificial Intelligence **Narrow** focuses on performing a specific task.
- 2 -..... **Light sensors**..... are used in robots operating in areas with changing light.
- 3 - **Scratch** is a free program for teaching the basics of programming.
- 4 -Sprite movement can be repeated using the command..... **Repeat**.....
- 5- **Controller** is the brain of robot .

(Motion - Programming sections - Deep Learning - Communication Tools
- Motion sensors)

- 1 -..... **Motion sensors**..... help robots navigate and interact with their surrounding environment.
2. **Programming sections**is a set of commands arranged in a specific manner.
- 3.. **Motion**contains a set of building blocks for moving sprites in Scratch.
- 4.... **Deep Learning** ..is one of the artificial intelligence tools that rely on neural networks to learn things very quickly.
- 5- Robots use **Communication Tools**..... to interact with users or other robots.

Correct the underlined part in the following sentence:

- 1 -The repeat command is used to repeat a set of commands several times in Scratch.
- 2 -Scratch is a fun educational tool for learning the basics of programming.
- 3 -Sound sensors are used in robots that operate in areas with variable light.
- 4 -A model can be created on the Teachable Machine website to teach a computer to recognize groups of images.
- 5 -Roomba is an example of an home robot.
- 6 -LEGO Mindstorms is an example of a educational robot.
- 7 -Controller are used as a control unit (the brain of the robot) to direct and control the robot.
- 8 -Motion sensors help robots navigate and interact with their surroundings.
- 9 -From the File menu, you can save your project in Scratch.
- 10 -The X coordinate represents the horizontal axis in Scratch.
- 11 -The stage area displays the project results in Scratch.
- 12 -The file extension for a Scratch program project is .Sb3 .

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر مارس



»» **Artificial intelligence** is not just one type, there are many different types. Imagine we have a big garden full of different flowers, each flower has a different shape and color, and so it is with artificial intelligence

»» Types of artificial intelligence:

Narrow AI	General AI	Super AI
Focuses on performing a specific task Examples: Face recognition or language translation Robot can play chess great, but he can't do it with anything else	He can do any task a human can do This type is more advanced Example A robot that perfectly mimics humans, can think, create, solve complex problems, learn and adapt to... Different situations	Exceeds human intelligence in all areas This type is the most advanced It can easily solve problems that are difficult for humans to solve. Discovering new things we never imagined

»» Applications of artificial intelligence in daily life:-

□ **Personal assistant** Assistant Like **Siri** or **Alexa**, It uses artificial intelligence to understand and carry out your commands.



□ **Smart Games** Some of these games use artificial intelligence to make the game more fun and challenging, as the characters in the game can learn from their mistakes and become more intelligent.



☐ Smart cars: Smart Cars

It is a car that drives itself without a driver. This is the dream of the future that is getting closer to being realized thanks to artificial intelligence.



☐ Digital Doctors

Doctors are using artificial intelligence to help them diagnose and treat diseases faster and more accurately.



☐ Instant Translator

Artificial intelligence can translate words and sentences instantly, which facilitates communication between people.

Translator

☐ Smart Shopping

Shopping sites offer you suggestions for products you might like. This is thanks to artificial intelligence. Which analyzes your previous purchasing behavior.



➤➤➤ Artificial intelligence fields

1- Machine learning – (Learning from mistakes):

Al has to learn new things, the more we show it a picture of a cat, the more it learns to name it, and the more we play a game with it, the smarter it becomes, this is called Machine Learning, and it is similar to when you learn to ride a bike, the more you fall, the better you learn how to balance.

Machine learning is like when you learn to ride a bike, every time you fall, you learn how to balance yourself better.

2- Natural Language Processing:- Can you imagine talking to your computer as if it were a friend? It understands our different languages and can answer our questions. This is Natural Language Processing, and it is like an intelligent language translator as it understands written and spoken human language, interprets it, and learns to "speak" human language.

3- Computervision – (see the world):-

Artificial intelligence can:

- * Looks at a picture and tells you everything about it
- * He can find your face in a crowded picture

*Distinguishing between images of different animals, which is called Computer Vision

4- Robotics:-

There are smart robots that do many tasks such as cleaning the house, playing chess, or performing complex and precise surgery, and they have the ability to work with great accuracy even in environments that are dangerous to humans

5- Simulation of human thinking and decision-making – (Expert systems:

Artificial intelligence can **solve complex problems** and **make difficult decisions**. This is the field of expert systems. It is similar to an intelligent doctor who can diagnose diseases.

6- Simulation of human learning – Deep Learning:

Deep learning aims to enable computer systems to **learn complex tasks** in a way similar to the way humans learn. Artificial intelligence has a mind similar to the human mind. It uses this mind to learn things very quickly. **Deep learning relies mainly on neural networks and deep learning.**

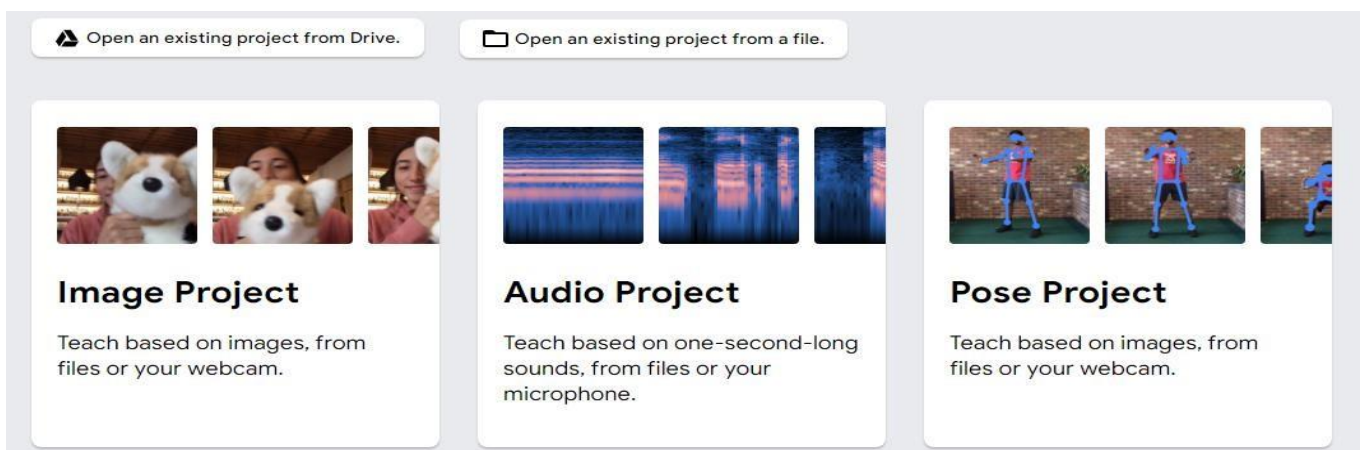
Model building training:

**** Create intelligent models to recognize images, sounds, and movements using machine learning**

**** Note :** It is preferable to update your Internet browser and work on Microsoft Edge browser

Click on the following link to enter the site

<https://teachablemachine.withgoogle.com>





Practical example: Let's say you want to make a game where you control a character on the screen with the movement of your hand

Steps:

- **Training:** You record your hand in different positions (such as raising your hand, lowering it, moving it right and left)
- **Recognition:** Teachable Machine learns to associate each position of your hand with a specific movement of the character on the screen.
- **Game:** When you move your hand in front of the camera, the character on the screen moves according to what the computer has learned.

Example application:

• Access the site:

Open your browser and type in the search bar Teachable Machine then enter the site..

• Select the training model:

We find several options, choose the option related to image recognition Image

• Preparing the camera:

The site will ask you to choose to upload images or allow it to use your device's camera. Click on the camera. Make sure the lighting is good and the camera background is simple so that it can focus. Computer on your hand movement.

• Computer training.

• Creating classes:

Create two classes Class 1 and Class 2 at least, for example Class 1 hand raised And Class 2 hand Shaky

• **Recording Examples:** For each category, record several examples of the corresponding hand movement. For example, for the category "raised hand" raise your hand several times, each time raising it with a specific movement or a different shape, and so on for the category "shaky hand."

• **Reviewing Examples:** Make sure the examples are clear and that the computer understands the difference between the two movements.

• **Training:** After you finish taking the pictures, press the button Train Model for Computer Education Movements.

• **Test the model:** After you finish training, the site will ask you to test the model.

o **Camera:** Point the camera at your hand and make the movements you trained.

o **Results:** You will see that the computer will try to guess the movement you are making.

• **Save the model:** If you like the model, you can save it and use it in other projects

Questions and exercises for the first lesson



Put ✓ Or X :-

1. Artificial intelligence is only used in the video game industry ()
2. Artificial intelligence can help doctors diagnose diseases ()
3. Self-driving cars rely entirely on artificial intelligence ()
4. AI can learn new things slowly ()
5. Artificial intelligence is a science of computer science . ()
6. For artificial intelligence to become intelligent, it needs small amounts of information. ()
7. Artificial intelligence is only one type. ()
8. Narrow artificial intelligence can perform any task that a human can perform. ()
9. General artificial intelligence is more advanced. ()
10. General artificial intelligence focuses on performing a specific task. ()
11. Super artificial intelligence can solve specific problems. ()
12. Smart Games are used to make playing games more fun. ()
13. Instant Translator is used to facilitate communication between people. ()
14. Smart Shopping gives you suggestions for products you might like. ()
15. Natural language processing is like a machine language translator. ()
16. Robots are very good at doing a lot of things with great accuracy. ()



Lesson Two: Sensor



»»» Sensors

□ They are devices that sense changes in the surrounding environment and convert them into signals so that machines and devices can understand them and make appropriate decisions based on them. They are considered the eyes and ears of machines.

□ These simple devices play a big role in our daily lives. **Examples:** – Our smartphones, modern cars, alarms, and robots

»»» How do sensors work?

A sensor is a translator that translates those sensations (such as heat, light, or sound) into a language that the computer understands, which is the language of numbers

»»» Sensors work through 3 main steps:

Sensing

- Captures information from the surrounding environment (such as heat, light, or sound).

Signal conversion

- Converts this information into electrical signals that can be read by electronic devices.

Transmission

- Signals are sent to another device to display the results or perform a specific operation.

»»» The importance of sensors for robots:

they represent the "senses" of the robot, helping it to see, hear, sense, and even touch things around it.

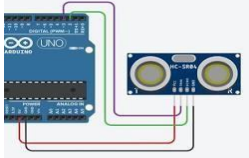
»»» Types of robotic sensors:

distance sensors Distance Sensors	Light sensors Light Sensors	Sound sensors Sound Sensors	Motion sensors Motion Sensors	Special sensors Special Sensors
Measures the distance between the robot and surrounding obstacles. This helps the robot avoid collisions 	It is used in robots that operate in places where there is variable light, like home robots. These sensors help the robot adapt to changing light conditions 	It is used in robots that interact with sounds. For example, robots that can respond to voice commands. 	Detecting motion and changes in direction, these sensors help the robot navigate and interact with surrounding objects 	Such as temperature and humidity sensors 

Some examples of electronic devices that use sensors:-

Vacuum cleaner robot	Surgical robot	Self-driving cars
Uses sensors to avoid obstacles and clean under furniture.	Uses precise sensors to perform surgeries.	It relies heavily on sensors to see the road and make decisions.

Types of distance sensors:-

	Ultrasonic sensors	Laser sensors	visible light sensors
Working principle	These devices emit high-frequency sound waves, then it receives the returning waves after they bounce off an object, and by measuring the time it takes for the wave to return, the distance to it can be calculated. Body	These devices emit a laser beam and then measure the time. The time it takes for a ray to return after bouncing off an object, and it is characterized by accuracy. High and longer range compared to ultrasound devices	These devices use digital cameras to analyze images and determine the distance to objects based on the size and distortion of the image.
Examples	Vacuum robots These devices are used to locate furniture and obstacles to avoid collision. It has parking systems : Helps measure the distance between the vehicle and surrounding obstacles. Fluid levels : Used to measure the level of liquids in tanks and reactors. 	3D laser scanners : Used to create 3D models of spaces. Ground scanning systems : Used in geological and archaeological surveys. Industrial measurement systems : used to measure dimensions with high accuracy in various industries. 	Self-driving car cameras Used to determine the distance to other vehicles and pedestrians. Traffic signals. Industrial vision systems : used in product inspection. And identify errors. Augmented reality systems : used to integrate digital elements with the real world. 

	infrared sensors	Time of Flight Sensors
Working principle	These devices emit infrared rays and then receive the rays. Return after rebounding from the body, widely used in devices Consumer Electronics	It depends on measuring the time it takes for a light pulse to reach an object and return to it. It is characterized by high accuracy and high speed
Examples	Remote Controls : Use infrared to communicate with electronic devices. Non-contact thermometers : Used to measure body temperature without the need for contact. Direct 	3D Sensor : used to create 3D models of objects. Motion tracking systems : used in video games and virtual reality systems



Factors for choosing the appropriate type of sensor

- **Required range:** The maximum distance that the device must measure.
- **Required accuracy:** The required measurement accuracy.
- **Operating environment:** The environmental conditions in which the device will operate (lighting, temperature, humidity).
- **Cost:** The cost of the device and installation.

By choosing the right device, robots and smart devices can interact with their environment more accurately and efficiently



Everyday applications of sensors :

Sensors are used daily in our lives, and the most prominent of these applications are:

- **In smart phones:** There are sensors that help in taking pictures, adjusting the lighting level, and even determining the location of the phone.
- **In modern cars:** Sensors are used to determine speed, warn of collisions, and help the driver park his car.
- **In smart homes:** Motion sensors turn on the lights automatically when someone enters the room.
- **Phone microphone:** It is a sound sensor that converts the sound you pick up into electrical signals that can be understood by the phone.
- **Motion sensor in games:** When you tilt your phone to the right or left while playing a game, the motion sensor is what tells the game to change the direction of the character.
- **Touch screen:** It is a group of small sensors that sense where your finger touches the screen.





Questions and exercises

Choose the correct answer

1. The main function of the sensor is
A. Store data B. Capture environmental changes and convert them into signals
C. Display images d. Produce sound
2. Sensors help robots to.....
A. Teach them new languages B. Allow them to interact with their environment
C. Increase their size D. Slow down their operations
3. A type of sensor is used to avoid obstacles.
A. Light sensors B. Sound sensors
C. Distance sensors D. Heat sensors
4. The first step in the operation of the sensor is
A. Transmitting B. Displaying
C. Sensing D. Transduction
- 5 are commonly used in remote controls.
A. Ultrasonic sensors B. Infrared sensors
B. C.Light sensors d . Motion sensors
6. Laser rangefinders are accurate because they use
A. Sound waves B. Visible light
C. High frequency waves D. Laser beams
7. A common application of sensors is the use of infrared in
A. Smartphones B. Remote controls
C. Vacuum cleaners D. 3D scanning
8. In which environment are light sensors useful?
A. In dark rooms B. In places with variable lighting conditions
C. In underwater environments D. In noisy factories



9. One of the sensors that are used to measure distance using high frequency sound waves is

- A. Ultrasonic sensors
- B. Laser rangefinders
- C. Infrared sensors
- D. Motion sensors

sensors are used to turn on lights when someone enters the room.

- A. Smartphone
- B. Smart car
- C. Smart Home Lighting System
- D. Smart Watch

is used for non-contact temperature measurement.

- A. Ultrasonic sensor
- B. Infrared sensor
- C. Light sensor
- D. Motion sensor

is the main purpose of the signal conversion step in sensors.

- A. Display the results
- B. Send the signals to another device
- C. Convert the information into electrical signals
- D. Turn off the sensor

helps cars determine the distance to other vehicles.

- A. Sound sensors
- B. Light sensors
- C. Infrared sensors
- D. Distance sensors

is the practical use of motion sensors in games.

- A. Change the volume
- B. Adjust the brightness of the screen
- C. Track the movements of players
- D. Improve the sound quality

15. Factors that determine the choice of a sensor for a particular application..... .

- A. Brand of the device
- B. Color of the device
- C. Environment and required accuracy
- D. Size of the device



Lesson Three: Robot



Robot

- ✓ It is a device that can be programmed to perform a set of specific tasks automatically
- ✓ The robot can move, sense via sensors, and interact with its surroundings
- ✓ It can be used in environments that require accuracy and speed of performance

Example: When we see a vacuum cleaner moving by itself in the house to clean the floor, this is a kind of robot which operates independently.

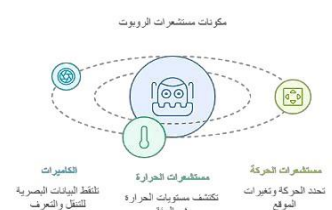
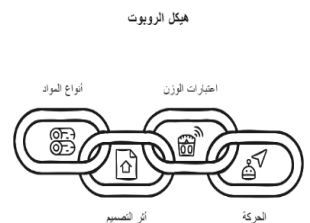
Types of robots

There are several types of robots, including:

- **Industrial robots:** They are robots used in factories, and they can perform tasks with high accuracy, such as robots that work in... Automobile factories produce production lines quickly and accurately.
- **Home robots:** These robots are found in homes, cleaning robots such as Roomba that helps you clean floors effortlessly. Human-like smart vacuums.
- **Medical robots:** Medical robots help doctors perform surgeries, and they can be very precise.
- **Educational robots:** These robots are used in schools to teach students how to program and technology, like LEGO robots. Mindstorms that can be programmed to perform specific tasks, to help students and to be an aid to the teacher.

Robot components:

- (1) **Structure:** is the main part that carries all the components of the robot, it can be made of materials. Different materials such as metal, plastic, or carbon, the design of the frame affects the weight of the robot and its ability to move.
- (2) **Sensors:** Sensors are the robot's senses, just as we use our eyes to see and our ears to hear, the robot uses sensors to pick up information from its surroundings. Some examples of sensors:
 - o **Sound sensors:** pick up and analyze sounds.
 - o **Cameras:** Robots help "see" things in front of them.



(3) Motors:

Motors are used to move the robot parts, there are different types. Different types of motors, such as electric motors and air motors, each of which has its own uses, and motors are considered artificial muscles. For robots, thanks to motors (**actuators**) robots can move and execute commands.

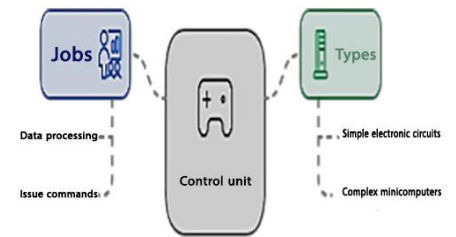
o Motors: Makes robots move.

o Robotic arm: Used in factories to move objects precisely



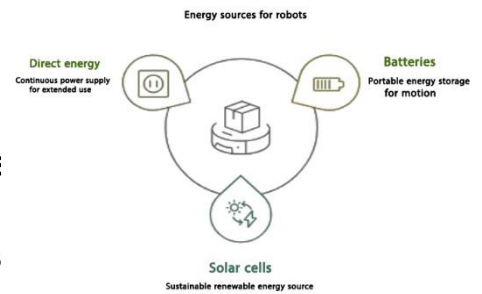
(4) The control unit

is the "**brain**" of the robot., where Processes data collected by sensors, And the commands are issued to the engines, which can be The controller is as simple as electronic circuits. Or as complex as small computers, like thinking Our brain when we decide to move, the processor Making the necessary decisions to move the robot.



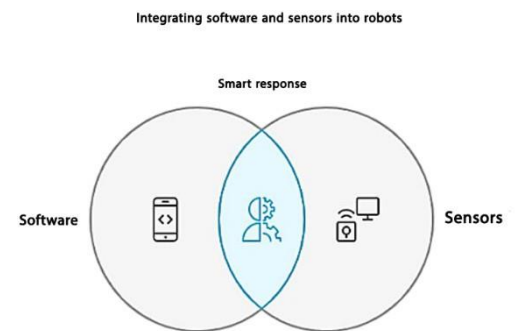
(5) Powersource

Robots need a power source to operate. Power sources can be batteries, Solar cells, or even power sources. Direct electricity. The choice of power source depends on Depending on the type of robot and the required operating time.

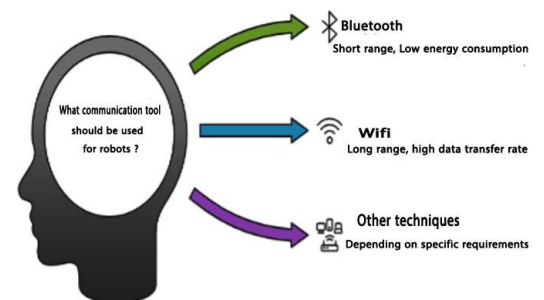


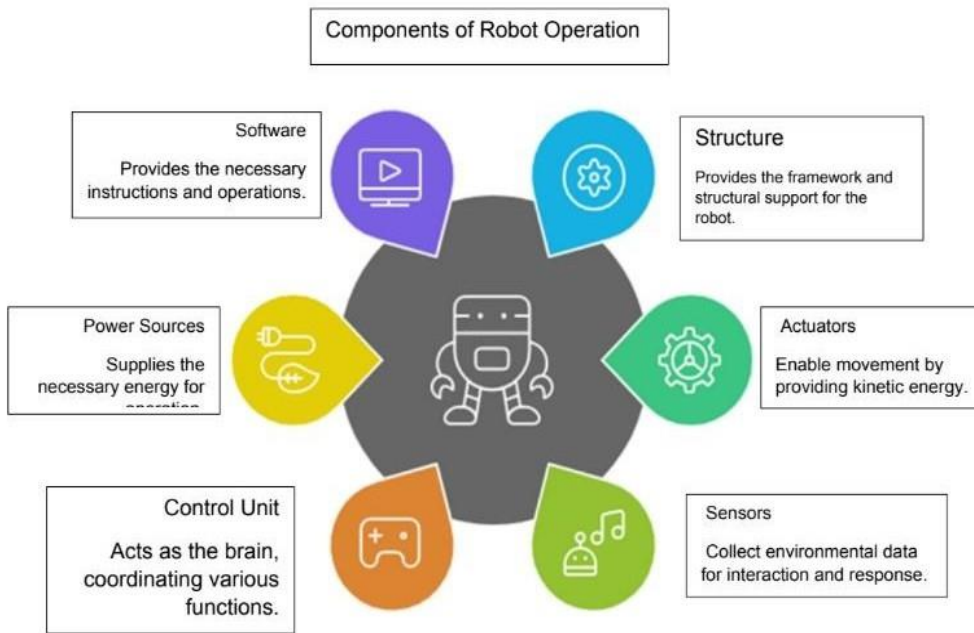
(6) Software

is what makes a robot "Smart" software includes algorithms. which determines how the robot responds. For the information it receives from the sensors. Software can range from programs Simple to Artificial Intelligence Systems Complex.



(7) **Communication Tools** Robots use communication tools to interact with users or with other robots, These tools can include Bluetooth, Wi-Fi, or other communication technologies



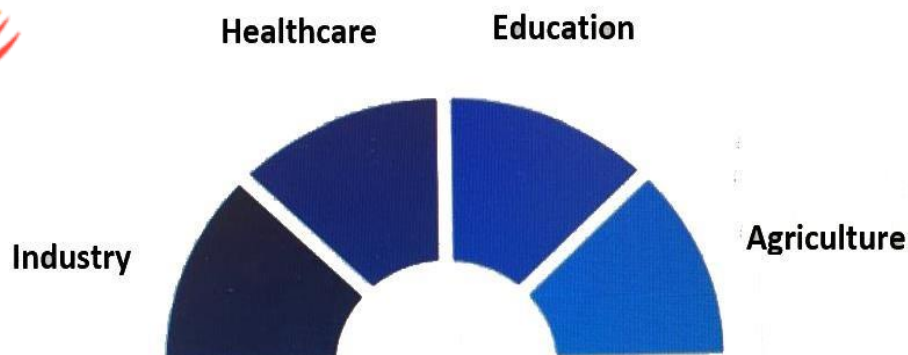


Example: A home robot, such as a robot vacuum cleaner, has sensors to avoid collisions with furniture and room walls.

»» Areas of use of robots:

- **Industry:** Improving productivity and reducing human error.
- **Healthcare:** Assisting doctors in surgeries or providing patient care.
- **Education:** Providing interactive learning experiences for students.
- **Agriculture:** Using robots in precision agriculture to increase yields and reduce waste.

Robotics Applications



» Challenges

Despite the many benefits of robots, there are challenges facing this technology, such as:

- **Security:** The need to ensure the safety of robots during work.
- **Employment:** Concern that robots may replace human labor.
- **Ethics:** Issues related to robotics and their impact on society

» Benefits of robots:–

– Increase efficiency and productivity:

- Industrial robots can work continuously without fatigue or interruption, which increases the amount of production in factories and saves time.
- In production lines, robots can perform repetitive tasks accurately and without any delay, which improves the quality of products and reduces errors.

– High accuracy and reduced errors:

- Medical robots are used in complex surgeries, helping doctors achieve greater accuracy and reduce the chances of human error.
- In the electronics industry, robots assemble small parts with precision, improving manufacturing accuracy and reducing losses due to defects.

– Safety and Security

- Robots help in dangerous tasks, such as dismantling bombs or working in hazardous environments, which reduces the risk to human lives and makes these tasks safer.
- In factories, robots can handle heavy weights and hazardous chemicals, reducing the chances of worker injury.

– Adaptation to diverse work

- Robots can be programmed to perform various tasks as needed, making them capable of performing different jobs efficiently. For example, home robots can clean or entertain.
- In the field of education, robots help students learn programming and science in an interactive way to help students and teachers



- Reduce costs in the long run

• Although the cost of manufacturing and installing robots may be high, robots reduce costs in the long run by reducing the need for human labor, achieving greater accuracy, and reducing errors and waste.

- Contribute to development

- Robots encourage technological development and open new horizons in many fields such as space, where robots are used to explore planets.
- In the field of medicine, robots contribute to advanced medical research and the development of new treatments.

Questions and exercises

Put ✓ Or X :-

1. Sensors do not play a role in the movement of robots and sensing their surrounding environment. ()
2. Robots work is limited to factories only. ()
3. Medical robots help doctors perform surgeries. ()
4. The design of the structure affects the weight of the robot and its ability to move. ()
5. Vision sensors are used to capture sounds. ()
6. The motors used in robots include electric motors and air motors. ()
7. The control unit processes the data collected by the sensors and issues commands to the motors. ()
8. Robots rely on direct energy sources only and we cannot use batteries or solar cells. ()
9. Robots do not need to use software in their work. ()
10. Robots use communication tools to interact with users or other robots. ()
11. The areas of use of robots include industry, healthcare, and education. ()

Questions and exercises



Choose the correct answer

1- The challenges facing robotics technology include.....

- A- Increased reliance on paper documents.
- B- Increased reliance on smartphones.
- C- Safety, employment and ethics.
- D- Increased reliance on traditional machines.

2- In production lines, robots can perform repetitive tasks accurately and without any delay, which leads to.....

- A- Increased efficiency and productivity.
- B- Decreased efficiency and productivity.
- C- Lack of product development.
- D- Slow production process.

3- Robots help in dangerous tasks such as.....

- A- Transportation.
- B- Handling heavy weights and hazardous chemicals.
- C- Irrigating gardens and parks.
- D- Cleaning the house

4- To take pictures and videos, we use sensors

- A- Sound
- B- Touch
- C- Light
- D- Vision



Lesson Four: Scratch



Scratch program:-

- It provides a very wide range of ideas that can be programmed and in which the student learns the principles of programming
- Allows students to be creative while learning and feels like they are playing a fun game while they learn
- It is a fun and easy-to-use educational tool that allows you to learn the basics of programming in a visual and fun way without having to write a lot of complex code

Features of Scratch :

Simple interface	It uses a visual interface based on blocks or commands that are placed on top of each other in a specific order and arrangement to create programs.
Educational program	Scratch is specially designed to teach basic programming concepts in a fun and engaging way.
Free software	Scratch can be downloaded from its official website and used for free
Developing creative thinking	Scratch helps learners develop their skills in creative thinking and problem-solving
Enhance problem solving skills	By trying mistakes and learning from them, students learn how to solve problems in a logical way
Developing collaboration skills	Students can work together on Scratch projects, enhancing teamwork skills
An exciting start to the world of programming	Scratch provides a strong foundation for moving on to more difficult programming languages in the future.
Share the project	Projects can be shared with others

Getting started with Scratch:

1. Download: Scratch can be downloaded for free from its official website, it can be obtained from the Internet through the link

<https://scratch.mit.edu>.

2. Explore: Explore the interface and learn how the different blocks and commands work.

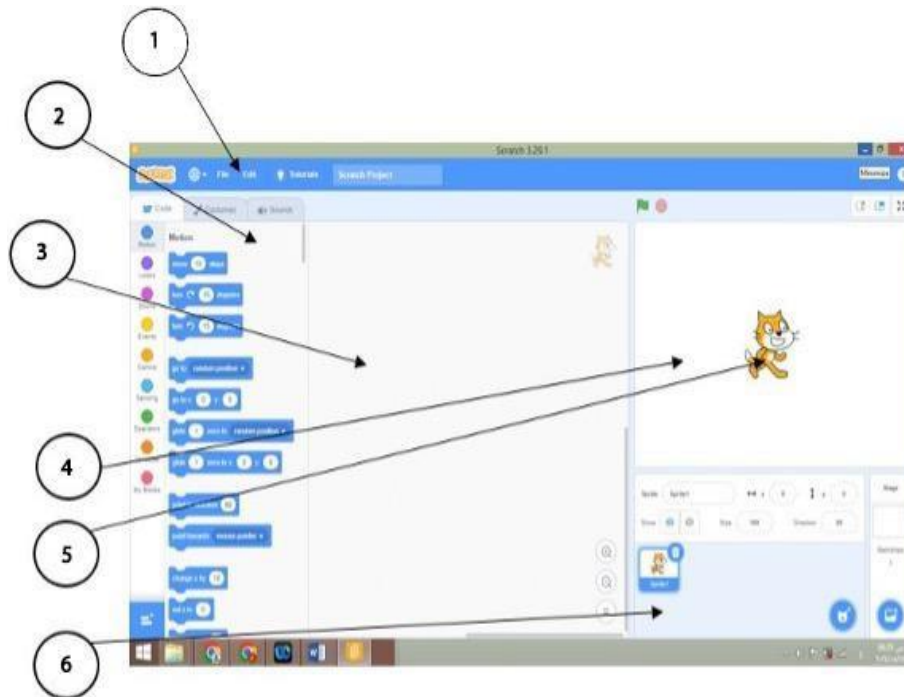
3. Create a project: Start by creating a simple project, such as animating a character or creating a short story.

4. Save the project.



»»» Download the program:

Through the following website: <https://scratch.mit.edu/download> Scratch program is downloaded



Getting to know the program interface:

1. Menu Bar.
2. Command Blocks Area.
3. Script Area (it collects programming sections "composing a group of graphical commands called blocks in a specific order").
4. Stage Area (it shows the result of the work or project).
5. Sprite object.
6. Sprites Area (it contains the objects used in the project).

»»» Change the program interface language



Project \ (What is required in the project is:

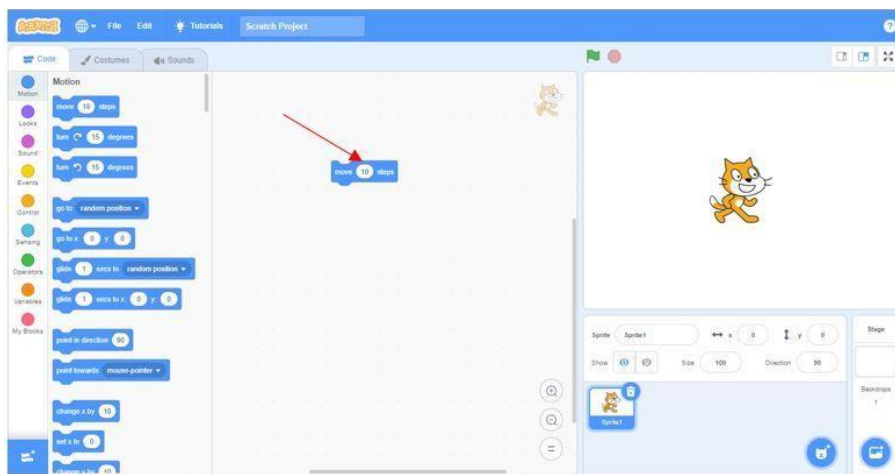
- Move the sprite (cat) on the platform or stage "30 steps".
- Then the phrase "Good morning" appears.

Project implementation:-

To be able to move the object on the platform, follow these steps

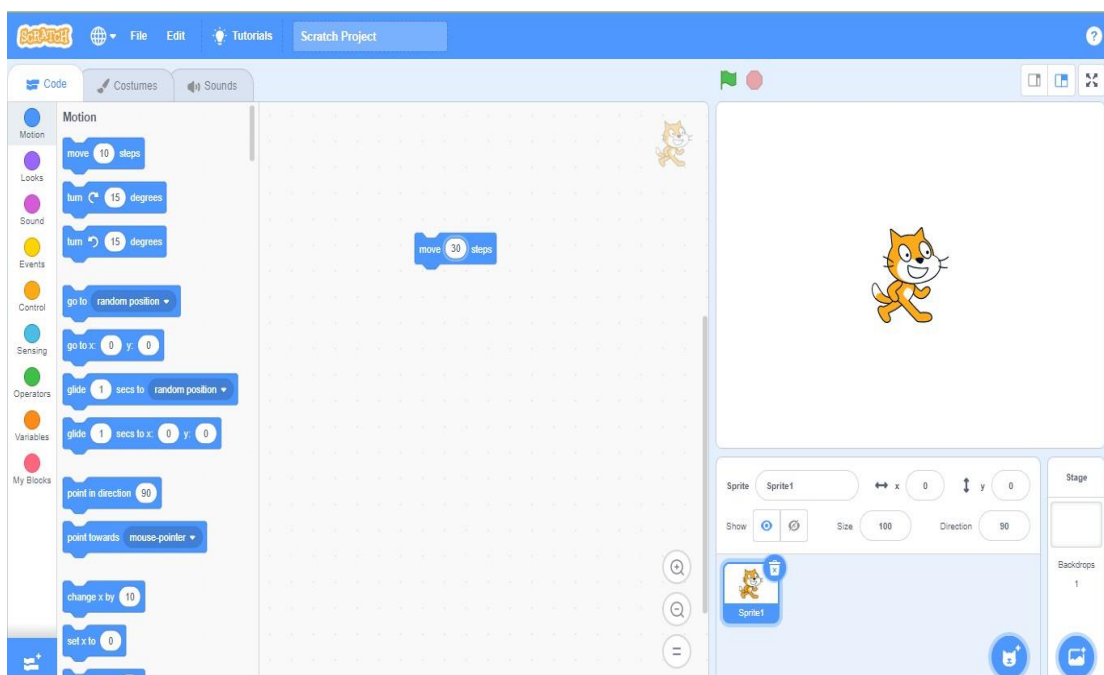
From the Blocks Area, Motion group , click and drag the command

and drop it into the Script Area  as :shown below



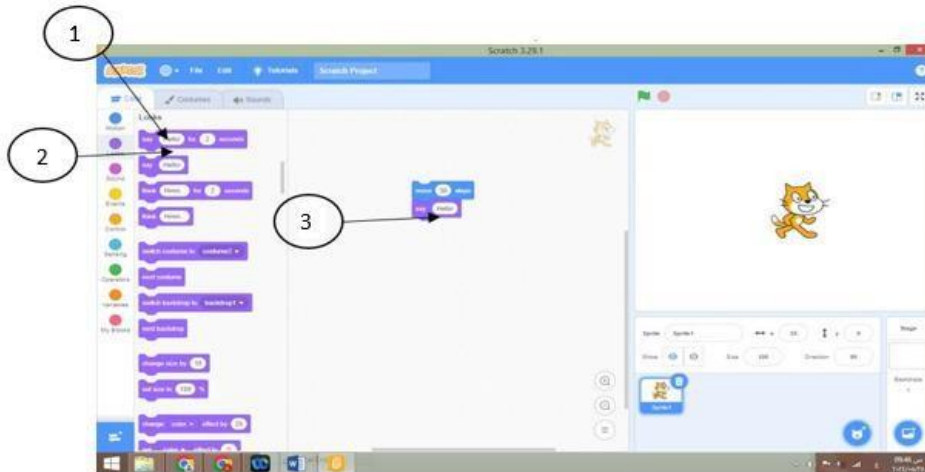
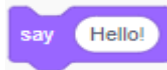
To make the object's movement steps 30 steps , double-click on the value 10 on the block(**the command**) and write the value 30 as in the following figure:

Writing the value 30 on the block as in the following figure:-



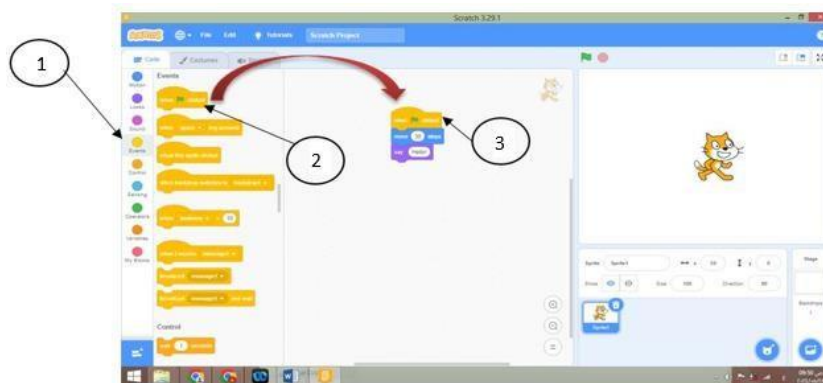
To display the phrase "Hello":

- 1- Look command set is selected
- 2- Then choose the command
- 3- Then click and drag on the order and insert it into the platform below the previous order.



To view the implementation of the project steps:-

1. In the Script Area, click on **Events Blocks**.
2. Click on the command **when green flag clicked** and drag it onto the platform
3. To be installed at the beginning of the code segment as shown in the figure:



4. To execute the project, click on the icon
5. To stop the project execution, click on the icon



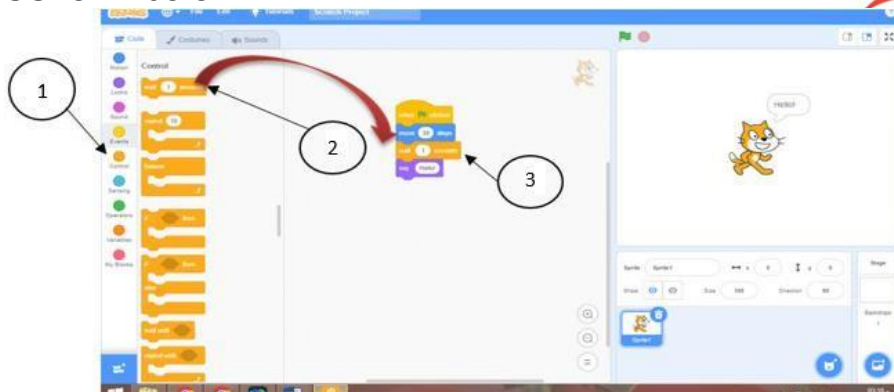
Note: When implementing the previous project, we notice that the movement was done quickly, and to address this, we can use Wait command from Control Blocks by following the following:



- 1- Click on Control Blocks
- 2- Click and drag a command
- 3- Place it as shown below:

wait 1 secs

and drop it into the Script Area



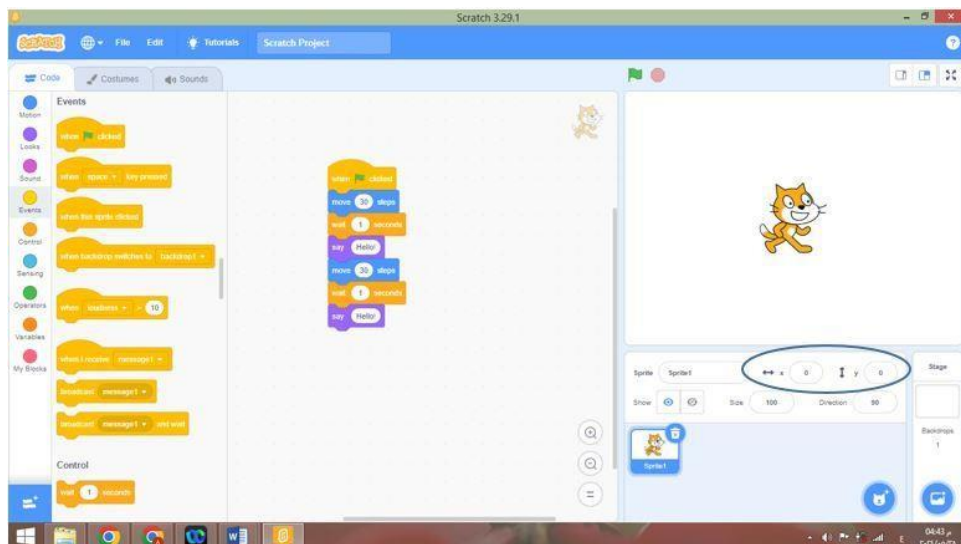
To re-execute the project, click on the icon 

Important Notes:

- The wait value represents (1 second).
- Installing a set of commands in a specific order called a **code section**.
- Use click, drag and drop to deal with any command (within) the code section.

Modify Project "1" Modify the previous project to make the movement continuous:

- To make the movement continuous, you can install the command several times
- Re-arrange it by clicking and dragging to the place where you want to start repeating.
- Modify the word "Hello" to the phrase "Good morning".



Find the platform coordinates:

Before implementing the project, the coordinates of the object on the platform are : $X=0$, which is the horizontal axis and represents horizontal movement , $Y=0$ which is , the vertical axis and represents vertical movement.



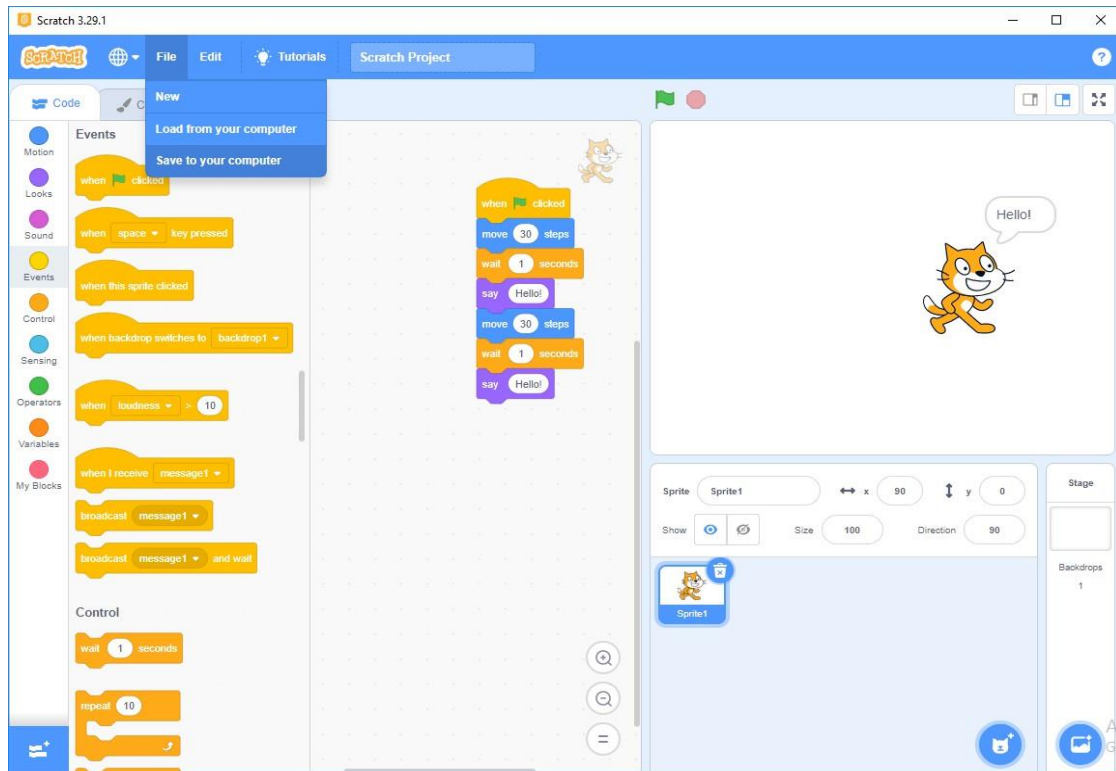
➤ Execute the project. Note that the value $X=0$ and the value $Y=0$ after executing the project.

➤ Sprite position change can be controlled. On the platform by clicking on it and (drag and drop) Drop . to another location on the platform

❑ Save the project in a file :

- 1- From the File menu, choose Save to your computer.
- 2- Select a location to save the file on one of the storage media.
- 3- Type the file name "Project 1"

Note: The file extension is Sb3



Questions and exercises



Put ✓ or X

- 1- The Scratch program provides a very wide range of ideas that can be programmed. ()
- 2- The Scratch program helps the student learn the principles of programming ()
- 3- The Scratch program is considered a difficult educational tool to use. ()
- 4- The student in the Scratch program needs to write a lot of complex codes. ()
- 5- Scratch uses a visual interface based on blocks. ()
- 6- The Scratch program is paid. ()
- 7- In the Scratch program, students face difficulty in sharing projects with others. ()
- 8- In the Scratch program, the Stage area shows the programming sections. ()
- 9- In the Scratch program, the result of the work or project appears in the Area Blocks area. ()





Answer Key of the Textbook

Lesson1

Put ✓ or X:-

1	X	10	X
2	✓	11	X
3	✓	12	✓
4	X	13	✓
5	✓	14	✓
6	X	15	✓
7	X	16	✓
8	X		
9	X		

Lesson2

Put ✓ or X:-

1	Capture environmental changes and convert them into	9	Ultrasonic sensors
2	Allow them to interact with their	10	Smart Home Lighting System
3	Distance sensors	11	Infrared sensor
4	.Sensing	12	Convert the information into electrical signals
5	Infrared sensors	13	Distance sensors
6	Laser beams	14	Track the movements of players
7	Remote controls	15	Environment and required accuracy
8	In places with variable lighting conditions		

Lesson3

A-Put ✓ or X:-

B- Choose the correct answer

1	✓	1	Safety, employment and ethics
2	X	2	Increased efficiency and productivity
3	✓	3	Handling heavy weights and hazardous chemicals
4	✓	4	Vision
5	X		
6	✓		
7	✓		
8	X		
9	X		
10	✓		
11	✓		



Lesson4

Put or X

1	√	6	X
2	√	7	X
3	X	8	X
4	X	9	X
5	√	10	√

Question 1: Place a checkmark (√) or an X next to the following statements

Degree

1. Artificial intelligence can learn new things slowly. ()
- 2 .Sensors help robots interact with their environment. ()
- 3 .Sensors do not play a role in robot movement or sensing their surrounding environment. ()
- 4 .Scratch provides a very wide range of programming ideas. ()
- 5 .The Start command is used to stop project execution. ()

Question 2: Choose the correct answer from the following options:-

Degree

- 1- Artificial intelligence focuses on performing a specific task.
- a. Narrow b. General c. Super d. Precise
- 2- The first step in the operation of a sensor is.....
- a. Transmission b. Display c. Sensing d. Transformation
- 3- The challenges facing robotics technology include.....
- a. Increased reliance on paper documents
- b. Increased reliance on smartphones
- c. Security, employment, and ethics
- d. Increased reliance on traditional machinery
- 4- Scratch uses a visual interface that relies on.....
- a. Difficult commands b. Images c. Blocks d. Drawings
- 5- The position of an object on the stage is determined by the value of.....
- a. Horizontal and vertical axes b. Click on the object
- c. Stage d. Discretion

Question 1: Place a checkmark (√) or an X next to the following statements

Degree

1- Python cannot be used to create applications and websites. ()

2- Light sensors are useful in underwater environments. ()

3- Robots are currently limited to factories. ()

4- Scratch is a difficult-to-use educational tool. ()

5- Artificial intelligence can help doctors diagnose diseases. ()

Question 2: Choose the correct answer from the following options :-.

Degree

1- Artificial intelligence can easily solve problems that are difficult for humans to solve, and discover new things we never imagined before.
a- Narrow b- General c- Super d- Precise

2- One of the common applications of sensors is the use of infrared in...
a- Smartphones b- Remote control devices
c- Vacuum cleaners d- 3D scanning

3- Robots help with dangerous tasks such as...
a- Transportation
b- Handling heavy weights and hazardous chemicals
c- Watering gardens and parks
d- Cleaning the house

4- To implement the project, click on the symbol...
a-  b-  c-  d- 

5- A library for analyzing and processing data...
a- NumPy
b- Pandas
c- Machine Learning
d- Python

School-----

student name-----

Class

date / / 2025

.Question 1: Place a checkmark (√) or an X next to the following statements

Degree

1. For artificial intelligence to become intelligent, it needs relatively small amounts of information. ()
2. Light sensors help cars determine the distance to other vehicles. ()
3. Robots use communication tools to interact with users or other robots. ()
4. In Scratch, the result of a task or project appears in the command group area. ()
5. Python is a free and open-source programming language, meaning no one can develop it. ()

Question 2: Choose the correct answer from the following options :-

Degree

- 1- Like Siri or Alexa, artificial intelligence is used to understand and execute your commands.....
- A. Personal Assistant

B. Interpreter

C. Smart Shopping

D. Natural Language
- 2- Python is a language that translates code line by line.
- A. Open Source

B. Interpreted

C. Easy to Use

D. Difficult to Use
- 3- In production lines, robots can perform repetitive tasks accurately and without delay. This leads to:
- A. Increased efficiency and productivity

B. Decreased efficiency and productivity

C. Lack of product development

D. Slower production
- 4- In Scratch, a new background is inserted into the project through the programming area.....
- A. Stage

B. Block Area

C. Choose a Backdrop

D. Sprite
- 5- If the movement is done quickly, the following command is used from Control Panel:
- A. Wait

B. Repeat

C. Forever

D. Else

School-----

student name-----

Class

date / / 2025

.Q 1: Place a checkmark (✓) or an X next to the following statements

Degree

1. Machine learning enables artificial intelligence to learn from mistakes and improve performance. ()
2. Vacuum cleaner robots use sensors to avoid collisions with obstacles. ()
3. Robots can perform many tasks with high precision. ()
4. The frame is the basic part that supports all the components of a robot. ()
5. X-coordinates represent the horizontal movement of an object on a stage.()
6. The default position of an object on a stage is (80,100). ()
7. Python libraries provide ready-made solutions to many problems. ()
8. There is only one type of artificial intelligence. ()
9. Python is considered one of the most difficult programming languages. ()
10. Scratch programming helps develop creative thinking and problem-solving skills. ()

Q 2: Choose the correct answer from the options in parentheses.

Degree

(Python – Script Area – Machine Learning – Robotics – Sensors)

- 1-.....A technology that enables artificial intelligence to learn from mistakes to improve its performance.
- 2-A programming language widely used in machine learning and web development.
- 3-A device that can be programmed to perform a set of tasks automatically.
- 4-Are devices that sense changes in the surrounding environment.
- 5- Thearea in the Scratch programming language where blocks are assembled to form the snippet code.

School-----

Class

student name-----

date / / 2025

Sample 1



م	A:True or false	م	B: choose
1	x	1	Narrow
2	✓	2	Sensing
3	x	3	Security, employment, and ethics
4	✓	4	. blocks
5	x	5	Horizontal and vertical axes

Sample 2

م	A:True or false	م	B: choose
1	x	1	Super
2	✓	2	Remote control devices
3	x	3	Handling heavy weights and hazardous chemicals
4	x	4	 flag
5	✓	5	Pandas

Sample 3

م	A:True or false	م	B: choose
1	✓	1	Personal Assistant
2	✓	2	Interpreted.
3	✓	3	Increased efficiency and productivity
4	x	4	Choose a Backdrop
5	x	5	Wait

Sample 4

م	A:True or false			م	B: choose
1	✓	6	x	1	Machine Learning
2	✓	7	✓	2	Python
3	✓	8	x	3	Robotics
4	✓	9	x	4	Sensors
5	✓	10	✓	5	Script Area

حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

اختبار شهر مارس



Q1: Choose the correct answer

1. is a branch of computer science.
 - a. Scratch
 - b. String
 - c. Artificial intelligence
 - d. Motor
2. **Narrow AI** focuses on performing
 - a. multiple tasks
 - b. specific tasks
 - c. human-like tasks
 - d. all tasks
3. is an example of **General Artificial Intelligence (GAI)**.
 - a. A chess-playing robot
 - b. A robot that mimics humans
 - c. Siri
 - d. None of the previous
4. **AI** can solve problems that are difficult for humans to solve.
 - a. Narrow
 - b. Play games
 - c. Super
 - d. Accurate
5. **Natural Language Processing** enables AI to
 - a. recognize images
 - b. understand human languages
 - c. perform surgeries
 - d. drive cars
6. **like Siri or Alexa** use artificial intelligence to understand your commands.
 - a. Personal assistants
 - b. Instant translators
 - c. Smart shopping sites
 - d. Digital doctors
7. is an application of artificial intelligence in our daily life.
 - a. Text editor
 - b. NumPy
 - c. Smart shopping
 - d. Controller
8. is a field of AI that involves learning from mistakes.
 - a. Machine Learning
 - b. Natural Language Processing
 - c. Computer Vision
 - d. Robotics
9. is a field of AI that enables computers to interpret visual information.
 - a. Robotics
 - b. Computer Vision
 - c. Deep Learning
 - d. Natural Language Processing



- 10. is a tool that helps you create models to recognize images, sounds, and movements.**
- a. Google Drive
 - b. Microsoft Edge
 - c. Teachable Machine
 - d. Alexa
- 11. Deep learning mainly relies on**
- a. neural networks
 - b. databases
 - c. robotics
 - d. language models
- 12. Artificial Intelligence is a type of AI that can discover new things that we could not have imagined before.**
- a. General
 - b. Narrow
 - c. Wide
 - d. Super
- 13. Expert system means AI can**
- a. solve complex problems
 - b. make difficult decisions
 - c. understand languages
 - d. both a and b
- 14. Teachable Machine helps create models to recognize**
- a. images only
 - b. sounds only
 - c. movements only
 - d. all of them
- 15. One of the Artificial Intelligence (AI) applications we use in our daily life is the**
- a. calculator
 - b. instant translation
 - c. programming languages
 - d. mobile phone
- 16. The first step in model building training is**
- a. testing
 - b. teaching
 - c. saving
 - d. none of them
- 17. What should you do after training an AI model on Teachable Machine?**
- a. Delete the project.
 - b. Restart the computer.
 - c. Test the model.
 - d. Change the browser.
- 18. You can save a Teachable Machine project on**
- a. Google Drive
 - b. your device
 - c. both a and b
 - d. none of them



19. devices capture information from the surrounding environment and convert it into electrical signals.

- a. Sensors
- b. Strings
- c. Touch screen
- d. Robotic arm

20. Sensors help robots to

- a. teach them new languages
- b. increase their size
- c. slow down their operations
- d. allow them to interact with their environment

21. are types of sensors used to avoid obstacles.

- a. Light sensors
- b. Sound sensors
- c. Distance sensors
- d. Heat sensors

22. The first step in the operation of the sensor is

- a. transmitting
- b. displaying
- c. sensing
- d. transduction

23. are commonly used in remote controls.

- a. Ultrasonic sensors
- b. Infrared sensors
- c. Light sensors
- d. Motion sensors

24. What step comes after Signal Conversion in the operation of sensors?

- a. Sensing
- b. Transmission
- c. Data Processing
- d. Displaying Results

25. Laser rangefinders are accurate because they use

- a. sound waves
- b. visible light
- c. high frequency waves
- d. laser beams

26. Which of these factors is NOT important when choosing the appropriate type of sensor?

- a. Required range
- b. Required accuracy
- c. Operating environment
- d. Brand popularity

27. A common application of sensors is the use of infrared in

- a. smartphones
- b. remote control
- c. vacuum cleaners
- d. 3D scanning



28. In which environment are light sensors useful?

- a. In dark rooms
- b. In noisy factories
- c. In places with variable lighting conditions
- d. In underwater environments

29. One of the sensors that are used to measure distance using high frequency sound waves is

- a. ultrasonic sensors
- b. laser rangefinders
- c. infrared sensors
- d. motion sensors

30. sensors are used to turn on lights when someone enters the room.

- a. Smartphone
- b. Smart car
- c. Smart home lighting system
- d. Smart watch

31. are used for non-contact temperature measurement.

- a. Ultrasonic sensors
- b. Infrared sensors
- c. Light sensors
- d. Motion sensors

32. is the main purpose of the signal conversion step in sensors.

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- b. Sending the signals to another device
- c. Converting the information into electrical signals
- d. Turning off the sensor

33. help cars determine the distance to other vehicles.

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- b. Light sensors
- c. Infrared sensors
- d. Distance sensors

34. To measure body temperature without direct contact, use the sensors.

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- b. visible light
- c. laser
- d. infrared

35. sensors detect movement and changes in directions.

- a. Distance
- b. Motion
- c. Sound
- d. Light

36. Factors that determine the choice of a sensor for a particular application include the

- a. brand of the device
- b. color of the device
- c. environment and required accuracy
- d. size of the device



37. The challenges facing robotics technology include

- a. the increased reliance on paper documents
- b. the increased reliance on smartphones
- c. safety, employment, and ethics
- d. the increased reliance on traditional machines

38. In production lines, robots can perform repetitive tasks accurately without any delay, which leads to

- a. slow production
- b. decreased efficiency
- c. increased efficiency and productivity
- d. lack of development

39. Robots assist in dangerous tasks such as

- a. transportation and communication means
- b. handling heavy weights and hazardous chemicals
- c. irrigating gardens and parks
- d. cleaning the house

40. To take pictures and videos, we use sensors.

- a. sound
- b. touch
- c. light
- d. vision

41. is a device that can be programmed to perform a set of specific tasks automatically.

- a. Python
- b. Scratch
- c. A robot
- d. A sensor

42. are used to move parts of a robot.

- a. Sensors
- b. Structures
- c. Motors
- d. Controllers

43. is an example of a home robot.

- a. An industrial robot
- b. A medical robot
- c. Roomba
- d. An educational robot

44. is the main part that carries all the components of the robot.

- a. Motor
- b. Structure
- c. Sensor
- d. Controller

45. The is the "brain" of the robot.

- a. structure
- b. motor
- c. sensor
- d. controller



46. A power source for robots is the

- a. sensor
- b. motor
- c. batteries
- d. software

47. The used in robots include(s) electric and pneumatic.

- a. Scratch
- b. string
- c. artificial intelligence
- d. motors

48. Robots use to interact with users or other robots.

- a. sensors
- b. communication tools
- c. motors
- d. power sources

49. make(s) the robot smart, including algorithms to respond to information.

- a. A controller
- b. Software
- c. Motors
- d. Sensors

50. A benefit of using robots in industry is

- a. increasing human errors
- b. reducing productivity
- c. improving accuracy
- d. high costs

51. Medical robots are known for their

- a. entertainment
- b. accuracy
- c. speed
- d. cleaning

52. An example of a communication tool used by robots is

- a. sensors
- b. Wi-Fi
- c. Bluetooth
- d. both b and c

53. An example of educational robots is

- a. Roomba
- b. LEGO Mindstorms
- c. Zoomba
- d. all of them

54. The smart vacuum cleaner is a type of robot used for floor cleaning.

- a. industrial
- b. home
- c. agricultural
- d. medical



- 55. The structure of a robot can be made of materials, such as**
- a. metals
 - b. plastic
 - c. carbon
 - d. all of them
- 56. Scratch uses to create programs.**
- a. command lines
 - b. visual blocks
 - c. text-based files
 - d. audio files
- 57. Scratch helps students**
- a. make remote controls
 - b. learn the principles of programming
 - c. 3D scanning
 - d. all of the previous
- 58. Scratch can be used to create**
- a. games
 - b. animations
 - c. simulations
 - d. all of them
- 59. Scratch can be downloaded**
- a. for free
 - b. for a fee
 - c. with a subscription
 - d. none of them
- 60. The "Sprite" in Scratch represents a/an**
- a. background
 - b. object or character
 - c. command block
 - d. none of them
- 61. is an educational tool that allows learning the basics of programming in a fun and engaging way, such as programming games and illustrated stories.**
- a. Artificial Intelligence
 - b. Scratch
 - c. Python
 - d. A robot
- 62. Scratch helps enhance skills.**
- a. problem-solving
 - b. collaboration
 - c. creative thinking
 - d. all of them
- 63. In Scratch, the result of the work or project appears in the**
- a. Blocks area
 - b. Stage area
 - c. Script area
 - d. none of them



- 64. The sprites used in a Scratch project appear in the area.**
- a. Sensors
 - b. Bluetooth
 - c. Strings
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- 65. To be able to move the object, we use the from the Blocks Area.**
- a. Control
 - b. Pen
 - c. Sound
 - d. Motion
- 66. To make the sprite move 30 steps, change the value in the "move" block to**
- a. 10
 - b. 30
 - c. 50
 - d. 100
- 67. To execute the project, click on the icon**
- a. Scratch icon
 - b. camera icon
 - c. stop icon
 - d. green flag icon
- 68. If the movement is too fast, the command from Control Blocks is used.**
- a. Wait
 - b. Repeat
 - c. Forever
 - d. Else
- 69. To make the movement continuous, you can install the "move" command time(s).**
- a. one
 - b. several
 - c. zero
 - d. none of them
- 70. Installing a set of commands in a specific order is**
- a. code section
 - b. menu bar
 - c. stage area
 - d. sprite
- 71. To save your project, select Save to your computer from the menu.**
- a. file
 - b. edit
 - c. delete
 - d. share
- 72. The file extension for a Scratch project is**
- a. Docx
 - b. Sb3
 - c. bmp
 - d. Jpg



Q2: Put (✓) or (X)

1. Personal assistants like Siri are some of the AI applications. ()
2. Artificial intelligence is only used in the video game industry. ()
3. Artificial intelligence can help doctors diagnose diseases. ()
4. Self-driving cars rely entirely on artificial intelligence. ()
5. Artificial intelligence can learn new things slowly. ()
6. Artificial intelligence is a science of computer science. ()
7. For artificial intelligence to become intelligent, it needs small amounts of information. ()
8. Artificial intelligence is only one type. ()
9. Artificial intelligence fields include Deep Learning, Machine Learning, and Natural Language Processing. ()
10. Narrow artificial intelligence can perform any task that a human can perform. ()
11. General artificial intelligence is more advanced. ()
12. Super artificial intelligence focuses on solving specific problems. ()
13. Smart games are used to make playing games more fun. ()
14. Instant translator is used to facilitate communication between people. ()
15. Smart shopping gives you suggestions for products you might like. ()
16. General artificial intelligence focuses on performing a specific task. ()
17. Natural Language Processing is like a machine language translator. ()
18. Robots are very good at doing a lot of things with great accuracy. ()
19. Teachable Machine helps create intelligent models to recognize images. ()
20. Sensors are devices that sense changes in the environment and convert them into signals. ()
21. Sensors are not used in smartphones. ()
22. Sensors help robots interact with their environment. ()
23. The cost of a sensor is not a significant factor when choosing the appropriate type. ()
24. The first step in the operation of the sensor device is signal conversion. ()
25. A thermometer displays the temperature result on a digital screen. ()
26. Robots can recognize their surroundings without sensors. ()
27. Distance sensors help cars determine the distance to other vehicles. ()
28. Light sensors are used in robots that operate in places with constant light. ()
29. Sound sensors are used in robots that react to sounds. ()
30. Motion sensors detect movement and changes in direction. ()
31. Ultrasonic sensors emit light waves to measure distance. ()
32. The smart lighting system in the home uses sensors to turn on the lights automatically when someone enters the room. ()
33. Laser rangefinders are less accurate than ultrasonic sensors. ()
34. Visible light sensors use infrared rays to determine the distance to objects. ()
35. Remote control is an example of infrared sensors. ()
36. Time of flight sensors measure the time it takes for a light pulse to reach an object and return. ()
37. Choosing the appropriate sensor depends on factors, such as range, accuracy, environment, and cost. ()
38. Robots can improve productivity and reduce human errors in industry. ()



39. Sensors do not play a role in the movement of robots and sensing their surrounding environment. ()
40. Home robots, like Roomba, help clean floors without human effort. ()
41. The robots' work is limited to factories only. ()
42. The structure of a robot can be made of metal, plastic, or carbon. ()
43. Medical robots help doctors perform surgeries. ()
44. The controller is the industrial muscles of robots. ()
45. The design of the structure affects the weight of the robot and its ability to move. ()
46. Vision sensors are used to capture sounds. ()
47. The motors used in robots include electric motors and air (pneumatic) motors. ()
48. The control unit processes the data collected by the sensors and issues commands to the motors.()
49. Robots rely on direct energy sources only and we cannot use batteries or solar cells. ()
50. Robots do not need to use software to operate. ()
51. Robots use communication tools to interact with users or other robots. ()
52. The areas of use of robots include industry, healthcare, and education. ()
53. Software is responsible for making a robot "smart" by determining its responses to sensor information. ()
54. A robot is a device that can be programmed to perform a set of tasks automatically. ()
55. The Scratch program provides a very wide range of ideas that can be programmed. ()
56. In the Wait command, the wait value of 1 represents 1 second. ()
57. The Scratch program helps the student learn the principles of programming. ()
58. The Scratch program is considered a difficult educational tool to use. ()
59. The Scratch program is characterized as being a free program. ()
60. In the Scratch program, the student needs to write a lot of complex codes. ()
61. The Scratch program uses a simple visual interface based on a set of Blocks. ()
62. The Scratch program is paid. ()
63. Scratch does not allow changing the language of the interface. ()
64. In Scratch, the horizontal and vertical axis are used to know the current location of the object on the platform. ()
65. In the Scratch program, students face difficulties in sharing projects with others. ()
66. In Scratch, the sprite name can be modified only once. ()
67. In the Scratch program, the result of the work or project appears in the Blocks area. ()
68. To implement the project, click on the green flag symbol. ()
69. Before executing any project, the objects coordinates on the platform should be y=10, x=10. ()
70. The position of the Sprite can be changed on the stage by double-clicking on it. ()



Q1: Choose the correct answer

1. is a branch of computer science.
 - a. Scratch
 - b. String
 - c. Artificial intelligence
 - d. Motor
2. **Narrow AI** focuses on performing
 - a. multiple tasks
 - b. specific tasks
 - c. human-like tasks
 - d. all tasks
3. is an example of **General Artificial Intelligence (GAI)**.
 - a. A chess-playing robot
 - b. A robot that mimics humans
 - c. Siri
 - d. None of the previous
4. **AI** can solve problems that are difficult for humans to solve.
 - a. Narrow
 - b. Play games
 - c. Super
 - d. Accurate
5. **Natural Language Processing** enables AI to
 - a. recognize images
 - b. understand human languages
 - c. perform surgeries
 - d. drive cars
6. **like Siri or Alexa** use artificial intelligence to understand your commands.
 - a. Personal assistants
 - b. Instant translators
 - c. Smart shopping sites
 - d. Digital doctors
7. is an application of artificial intelligence in our daily life.
 - a. Text editor
 - b. NumPy
 - c. Smart shopping
 - d. Controller
8. is a field of AI that involves learning from mistakes.
 - a. Machine Learning
 - b. Natural Language Processing
 - c. Computer Vision
 - d. Robotics
9. is a field of AI that enables computers to interpret visual information.
 - a. Robotics
 - b. Computer Vision
 - c. Deep Learning
 - d. Natural Language Processing



10. is a tool that helps you create models to recognize images, sounds, and movements.
- a. Google Drive
 - b. Microsoft Edge
 - c. [Teachable Machine](#)
 - d. Alexa
11. Deep learning mainly relies on
- a. [neural networks](#)
 - b. databases
 - c. robotics
 - d. language models
12. Artificial Intelligence is a type of AI that can discover new things that we could not have imagined before.
- a. General
 - b. Narrow
 - c. Wide
 - d. [Super](#)
13. Expert system means AI can
- a. solve complex problems
 - b. make difficult decisions
 - c. understand languages
 - d. [both a and b](#)
14. Teachable Machine helps create models to recognize
- a. images only
 - b. sounds only
 - c. movements only
 - d. [all of them](#)
15. One of the Artificial Intelligence (AI) applications we use in our daily life is the
- a. calculator
 - b. [instant translation](#)
 - c. programming languages
 - d. mobile phone
16. The first step in model building training is
- a. testing
 - b. [teaching](#)
 - c. saving
 - d. none of them
17. What should you do after training an AI model on Teachable Machine?
- a. Delete the project.
 - b. Restart the computer.
 - c. [Test the model.](#)
 - d. Change the browser.
18. You can save a Teachable Machine project on
- a. Google Drive
 - b. your device
 - c. [both a and b](#)
 - d. none of them



19. devices capture information from the surrounding environment and convert it into electrical signals.

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- c. slow down their operations
- [d. allow them to interact with their environment](#)

21. are types of sensors used to avoid obstacles.

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- b. Sound sensors
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24. What step comes after Signal Conversion in the operation of sensors?

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25. Laser rangefinders are accurate because they use

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- b. visible light
- c. high frequency waves
- [d. laser beams](#)

26. Which of these factors is NOT important when choosing the appropriate type of sensor?

- a. Required range
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27. A common application of sensors is the use of infrared in

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- b. color of the device
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- a. Python
- b. Scratch
- [c. A robot](#)
- d. A sensor

42. are used to move parts of a robot.

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- [c. Motors](#)
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- b. A medical robot
- [c. Roomba](#)
- d. An educational robot

44. is the main part that carries all the components of the robot.

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- [b. Structure](#)
- c. Sensor
- d. Controller

45. The is the "brain" of the robot.

- a. structure
- b. motor
- c. sensor
- [d. controller](#)



46. A power source for robots is the

- a. sensor
- b. motor
- [c. batteries](#)
- d. software

47. The used in robots include(s) electric and pneumatic.

- a. Scratch
- b. string
- c. artificial intelligence
- [d. motors](#)

48. Robots use to interact with users or other robots.

- a. sensors
- [b. communication tools](#)
- c. motors
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49. make(s) the robot smart, including algorithms to respond to information.

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- [b. Software](#)
- c. Motors
- d. Sensors

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- b. reducing productivity
- [c. improving accuracy](#)
- d. high costs

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- [b. accuracy](#)
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- b. Wi-Fi
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53. An example of educational robots is

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- [b. LEGO Mindstorms](#)
- c. Zoomba
- d. all of them

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- 63. In Scratch, the result of the work or project appears in the**
a. Blocks area
[b. Stage area](#)
c. Script area
d. none of them



64. The sprites used in a Scratch project appear in the area.
- a. Sensors
 - b. Bluetooth
 - c. Strings
 - [d. Sprites](#)
65. To be able to move the object, we use the from the Blocks Area.
- a. Control
 - b. Pen
 - c. Sound
 - [d. Motion](#)
66. To make the sprite move 30 steps, change the value in the "move" block to
- a. 10
 - [b. 30](#)
 - c. 50
 - d. 100
67. To execute the project, click on the icon
- a. Scratch icon
 - b. camera icon
 - c. stop icon
 - [d. green flag icon](#)
68. If the movement is too fast, the command from Control Blocks is used.
- [a. Wait](#)
 - b. Repeat
 - c. Forever
 - d. Else
69. To make the movement continuous, you can install the "move" command time(s).
- a. one
 - [b. several](#)
 - c. zero
 - d. none of them
70. Installing a set of commands in a specific order is
- [a. code section](#)
 - b. menu bar
 - c. stage area
 - d. sprite
71. To save your project, select Save to your computer from the menu.
- [a. file](#)
 - b. edit
 - c. delete
 - d. share
72. The file extension for a Scratch project is
- a. Docx
 - [b. Sb3](#)
 - c. bmp
 - d. Jpg



Q2: Put (✓) or (X)

1. Personal assistants like Siri are some of the AI applications. (✓)
2. Artificial intelligence is only used in the video game industry. (X)
3. Artificial intelligence can help doctors diagnose diseases. (✓)
4. Self-driving cars rely entirely on artificial intelligence. (✓)
5. Artificial intelligence can learn new things slowly. (X)
6. Artificial intelligence is a science of computer science. (✓)
7. For artificial intelligence to become intelligent, it needs small amounts of information. (X)
8. Artificial intelligence is only one type. (X)
9. Artificial intelligence fields include Deep Learning, Machine Learning, and Natural Language Processing. (✓)
10. Narrow artificial intelligence can perform any task that a human can perform. (X)
11. General artificial intelligence is more advanced. (✓)
12. Super artificial intelligence focuses on solving specific problems. (X)
13. Smart games are used to make playing games more fun. (✓)
14. Instant translator is used to facilitate communication between people. (✓)
15. Smart shopping gives you suggestions for products you might like. (✓)
16. General artificial intelligence focuses on performing a specific task. (X)
17. Natural Language Processing is like a machine language translator. (✓)
18. Robots are very good at doing a lot of things with great accuracy. (✓)
19. Teachable Machine helps create intelligent models to recognize images. (✓)
20. Sensors are devices that sense changes in the environment and convert them into signals. (✓)
21. Sensors are not used in smartphones. (X)
22. Sensors help robots interact with their environment. (✓)
23. The cost of a sensor is not a significant factor when choosing the appropriate type. (X)
24. The first step in the operation of the sensor device is signal conversion. (X)
25. A thermometer displays the temperature result on a digital screen. (✓)
26. Robots can recognize their surroundings without sensors. (X)



27. Distance sensors help cars determine the distance to other vehicles. (✓)
28. Light sensors are used in robots that operate in places with constant light. (✗)
29. Sound sensors are used in robots that react to sounds. (✓)
30. Motion sensors detect movement and changes in direction. (✓)
31. Ultrasonic sensors emit light waves to measure distance. (✗)
32. The smart lighting system in the home uses sensors to turn on the lights automatically when someone enters the room. (✓)
33. Laser rangefinders are less accurate than ultrasonic sensors. (✗)
34. Visible light sensors use infrared rays to determine the distance to objects. (✗)
35. Remote control is an example of infrared sensors. (✓)
36. Time of flight sensors measure the time it takes for a light pulse to reach an object and return. (✓)
37. Choosing the appropriate sensor depends on factors, such as range, accuracy, environment, and cost. (✓)
38. Robots can improve productivity and reduce human errors in industry. (✓)
39. Sensors do not play a role in the movement of robots and sensing their surrounding environment. (✗)
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41. The robots' work is limited to factories only. (✗)
42. The structure of a robot can be made of metal, plastic, or carbon. (✓)
43. Medical robots help doctors perform surgeries. (✓)
44. The controller is the industrial muscles of robots. (✗)
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46. Vision sensors are used to capture sounds. (✗)
47. The motors used in robots include electric motors and air (pneumatic) motors. (✓)
48. The control unit processes the data collected by the sensors and issues commands to the motors. (✓)
49. Robots rely on direct energy sources only and we cannot use batteries or solar cells. (✗)
50. Robots do not need to use software to operate. (✗)
51. Robots use communication tools to interact with users or other robots. (✓)



52. The areas of use of robots include industry, healthcare, and education. (✓)
53. Software is responsible for making a robot "smart" by determining its responses to sensor information. (✓)
54. A robot is a device that can be programmed to perform a set of tasks automatically. (✓)
55. The Scratch program provides a very wide range of ideas that can be programmed. (✓)
56. In the Wait command, the wait value of 1 represents 1 second. (✓)
57. The Scratch program helps the student learn the principles of programming. (✓)
58. The Scratch program is considered a difficult educational tool to use. (✗)
59. The Scratch program is characterized as being a free program. (✓)
60. In the Scratch program, the student needs to write a lot of complex codes. (✗)
61. The Scratch program uses a simple visual interface based on a set of Blocks. (✓)
62. The Scratch program is paid. (✗)
63. Scratch does not allow changing the language of the interface. (✗)
64. In Scratch, the horizontal and vertical axis are used to know the current location of the object on the platform. (✓)
65. In the Scratch program, students face difficulties in sharing projects with others. (✗)
66. In Scratch, the sprite name can be modified only once. (✗)
67. In the Scratch program, the result of the work or project appears in the Blocks area. (✗)
68. To implement the project, click on the green flag symbol. (✓)
69. Before executing any project, the objects coordinates on the platform should be y=10, x=10. (✗)
70. The position of the Sprite can be changed on the stage by double-clicking on it. (✗)



كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

